AFRICA RURAL DEVELOPMENT STUDY

BACKGROUND PAPER

RURAL DEVELOPMENT PROGRAMS IN ETHIOPIA: A REVIEW OF THE CHILALO AGRICULTURAL DEVELOPMENT UNIT, THE WOLAMO AGRICULTURAL DEVELOPMENT UNIT, AND THE MINIMUM PACKAGE PROGRAM

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RURAL DEVELOPMENT PROGRAMS IN ETHIOPIA:

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PREFACE

1. This report was prepared as a background paper for the Africa Rural Development Study (ARDS) conducted by the Development Economics Department of the World Bank. The ARDS was prompted by the very substantial interest in the East and West Africa Regional Offices of the Bank in finding ways of designing rural development projects which, despite the limited financial and manpower resources available for rural development in Africa, will effectively "reach" large numbers of low income rural people. Thirteen rural development projects and programs from sub-Saharan Africa, representing diversity in location, design and implementation, were selected for analysis (see attached list). The reviews raised a consistent set of questions regarding design, implementation and performance of these projects and programs to provide the basis for a comparative evaluation. The main report on the Africa Rural Development Study by Uma Lele summarizes the lessons that can be learned from these project reviews.

2. Each of the background papers is based on existing information, supplemented by field investigations. With rare exceptions, no additional quantitative data were collected. Because the availability of data varied widely between projects, there are substantial differences in the scope of the individual project reviews.

3. Since most of the data were collected by other agencies, the IBRD can not attest to the accuracy of the statistical information which appears in this report. The views expressed in this report are those of the author(s) and do not necessarily represent the views of the IBRD.

BACKGROUND PAPERS ON PROJECTS REVIEWED IN AFRICA PUBLIC EMPLOYMENT STUDY

French Technical Assistance in Cameroon: A Review of the Zones d'Action Prioritaire Integrées (ZAPI) and the Société du Developpement du Nkam (SODENKAM), by G. Belloncle and D. Gentil. Studies in Employment and Rural Development No. 2.

Rural Development Programs in Ethiopia: A Review of the Chilalo Agricultural Development Unit, The Wolamo Agricultural Development Unit and The Minimum Package Program, by T. Tecle. Studies in Employment and Rural Development No. 3.

Range Development in Kenya: A Review of Commercial, Company, Individual and Group Ranches, by H. Jahnke, H. Ruthenberg, H. Thimm. Studies in Employment and Rural Development No. 4.

Small Farmer Credit in Kenya: A Review of Major Credit Schemes, by J. D. von Pischke. Studies in Employment and Rural Development No. 5.

Smallholder Tea Project in Kenya: A Review of Kenya Tea Development Authority, by D. Sullivan. Studies in Employment and Rural Development No. 6.

Rural Development in Kenya: A Review of Special Rural Development Program, by N. Bedi. Studies in Employment and Rural Development No. 7.

Land Settlement in Kenya: A Review of the Squatter Problem, by P. Mbithi and C. Barnes. Studies in Employment and Rural Development No. 8.

Rural Development in Malawi: A Review of the Lilongwe Land Development Program, by B. H. Kinsey. Studies in Employment and Rural Development No. 9.

French Technical Assistance in Mali: A Review of Groundnut Operation and Cotton Scheme, by G. Anderson. Studies in Employment and Rural Development No. 10.

Small Scale Rural Industries in Nigeria: A Review of Industrial Development Centers, by H. Turner. Studies in Employment and Rural Development No. 11.

Smallholder Tobacco Development in Tanzania: A Review of Urambo and Tumbi Schemes, by M. Agarwal and D. Linsenmeyer. Studies in Employment and Rural Development No. 12.

Cotton Development in Tanzania: A Review of Cotton Program in Sukumaland, by M. Collinson. Studies in Employment and Rural Development No. 13.

Rural Development in Tanzania: A Review of Ujamaa, by P. Abraham and F. Robinson. Studies in Employment and Rural Development No. 14.

RURAL DEVELOPMENT PROGRAMS IN ETHIOPIA

SUMMARY, RECOMMENDATIONS AND TRANSFERABLE LESSONS

Summary

1. In an effort to initiate and accelerate economic growth and development where skilled manpower and capital are the limiting factors, Ethiopia has adopted an "integrated rural development" strategy in which scarce resources are to be concentrated within clearly defined geographical areas in the form of "package" projects. These package projects, of which CADU, WADU and the MPP 1/ are the first ones established, are given sufficient resources and sufficient autonomy to: (1) increase incomes of small farmers, (2) elicit their participation in the development efforts and (3) create possibilities for replicating the efforts on a large scale by training Ethiopians. The review of CADU, WADU and the MPP has been conducted on the basis of these stated aims and objectives.

2. Several factors made a thorough comparative evaluation of the three projects difficult. First, the projects did not state their assumptions, limitations and progress indicators clearly and unambiguously, partly due to lack of sufficient information at the planning and preparation stage. Second, having been in operation for different numbers of years, they vary considerably in the amount of information they have documented. Third, the quality and reliability of available information differs, reflecting the quality of their planning and evaluation units and the importance they attach to documentation of information (WADU is very poor in this respect). Fourth, they differ in terms of certain characteristics (geographic, socio-economic, etc.) of the areas they cover and in the number and intensities of their components. In spite of these problems, however, it was possible to draw some lessons that could be useful in suggesting improvements in the projects themselves and in the preparation of similar projects elsewhere.

3. Development Components: CADU and WADU, which are known as comprehensive projects having a large number of components, are pilot projects because one of their major functions is to develop innovations adapted to their respective project areas (and hopefully to other areas as well) through experimentation. The MPP, on the other hand, aimed at a wider target group and, constrained by shortages in trained manpower and financial resources, concentrates on the propagation of a few proven innovations tested by the comprehensive projects. Each MP area is planned to gradually become more comprehensive as more components are added into its package. Another distinguishing feature between the projects is that only WADU undertakes a settlement scheme.

1/ Chilalo Agricultural Development Unit, Wolamo Agricultural Development Unit, and the Minimum Package Program.

4. Extension, credit and marketing are the most important components of all three projects although the MPP's marketing component has not been operative during the first two years. The comprehensive projects also include the following components, but with different intensities: research, rural health, rural water supply, soil conservation, rural roads, women's extension and staff training. All encourage participation of their target population in making decisions in the development activities primarily by promoting the formation of cooperative societies. In order to make comparison of the projects' achievements easier, each of the key component will be analyzed separately.

5. Research: Research results of the various output-increasing technologies are practically non-existent in Ethiopia. Therefore, it was necessary for CADU and WADU to incorporate research as a major component in their packages. CADU is well equipped, both in staff and facilities, and as a result has had significant achievements. It has developed high yielding seed varieties (primarily wheat) adaptable to the various ecological zones of Chilalo. In addition, it has developed labor-intensive farm implements (harrows, plows, threshers, etc.), and high milking cross-bred dairy cows. WADU, on the other hand, has only been able to multiply some improved maize varieties developed in Kenya and has just started making some progress in its livestock breeding program. Its major shortcoming has been the shortage of staff and research facilities.

6. Extension: Extension activities primarily involve demonstration of seeds, fertilizers, pesticides, farm implements and various cultural practices (such as raw planting, planting dates, etc.). CADU and the MPP use "model farmers" and "demonstration plots" as the major means of introducing their innovations. The idea is to let the farmers elect one of their members who, with constant advice from the extension agent, will try the innovations on his farm with the hope that the ones who elected him will learn from his experience. In addition, the extension agent runs his own demonstration plots near major roads, markets, and churches where he is able to hold regular field days. WADU's demonstration strategy is to use different farmers' plots for different demonstrations, with farmers for different demonstrations being selected by an elected "group leader" and the "demonstrators". WADU's demonstrator performs the same functions as CADU's and the MPP's assistant extension agent. But he usually has less formal education he is required to have had an agricultural family background and he is assigned to the community he comes from, where he speaks the language and understands the social values. This is a different strategy than that followed by CADU and the MPP, in which assistant extension agents are sometimes assigned to areas whose language they don't even speak.

7. On the basis of the number of farmers that they have been able to reach, i.e., the number of farmers that have been enabled to use the new technologies introduced by the projects themselves, CADU and WADU

have been very successful.[1/] WADU reached about 7,000 farmers by the end of its second year even though its target was to reach 6,000 farmers in four years. CADU reached about 14,000 farmers by 1972, which is above the target set for that year. The MPP was able to reach only about 5,000 farmers in its second year although the target was about 12,000 farmers. The major shortcoming of the MPP was shortage of field staff. Since it has overcome its staff shortages, the MPP expects to achieve its planned targets in the future. The number of farmers reached per field staff is about the same for CADU and WADU, 118 and 120, respectively, and about 50 for the MPP.

8. Credit: The general setup of their credit programs is similar. But CADU and the MPP give their credit only in kind (in the form of improved farm inputs) while WADU provides cash loans for consumption purposes in addition. Credit eligibility in CADU is restricted to landowners cultivating less than 20 ha. and tenants cultivating less than 25 ha., and in the MPP to all farmers cultivating less than 20 ha. Any farmer within its project area is eligible for credit from WADU. Both CADU and the MPP require down payment (25% of the value of inputs taken on credit), two guarantors of whom one has to be the landlord if the borrower is a tenant, and a signed lease agreement between the landlord and the tenant if the borrower is a tenant. WADU requires that a borrower present any two guarantors acceptable to the credit screening committee (a farmer's committee). To further ensure higher repayments, WADU holds all farmers in a given area responsible for all of the credit distributed in the area. CADU and the MPP have adopted this policy recently.

9. Both in absolute terms and on a per farmer basis, more of the improved farm inputs have been distributed in CADU because more farmers participated, the average cultivated area per participant is larger and carefully selected and tested seed varieties suitable to the area were available. With respect to the distribution of the improved farm inputs among different income classes, CADU was able to improve the small cultivators' share by excluding the larger ones after its first two years experience indicated that most of the inputs were taken by a small number of big landlords. Nevertheless, the relatively large cultivators still account for disproportionately larger quantities of the inputs in all three projects because inputs are distributed in direct proportion to area cultivated (for example, a 20-ha. cultivator is eligible for 20 quintals each of fertilizer and improved seeds and a 1-ha. cultivator for 1 quintal of each). Furthermore, the larger owner-cultivators were found to have a higher rate of participation in the credit program, primarily because they have a higher rate of adoption of the new technologies (see Appendix III for details on the adoption process).

1/ Since the ultimate objective of the projects' extension programs is to see that the new technologies they introduced are being adopted by the target population, only farmers who are able to get these new technologies on credit from the projects are assumed to have been "reached", because there are no other sources for the new technologies.

10. Repayment rates were generally high in all three projects. WADU had 98% and 91% repayment rates in its first two years. Although the due date repayment rates are declining in CADU, mainly due to its failure to enforce repayments by taking defaulters to court, it has achieved an overall repayment rate of about 90%. In its first year, the MPP had about 89% of its loans repaid within six months after the due date. An important finding from the analyses of the repayment figures of the three projects is that small farmers are by no means worse defaulters than large farmers. In fact, a larger proportion of the defaulters in all three projects was found to be the larger farmers because they generally feel that they can get away with unsettled debts unharmed. Another interesting finding was that down-payment requirements do not necessarily ensure higher repayments since the highest repayments were achieved by WADU where down payment is required. Giving consumption loans does not lead to more defaults either, as the experience of WADU shows. On the other hand, there were clear indications that the poorest segment of the target population was not able to participate because either they could not afford the required down payments or their landlords refused to sign the lease clause in their loan applications.

11. Marketing: Although both attempt to ensure fair prices for their participants' output, CADU and WADU follow basically different marketing strategies. CADU is forced to handle only subsistence products, mainly wheat and milk; whereas WADU handles both cash crops (coffee, ginger, chilies) and subsistence crops. WADU conducts its marketing activities along cooperative lines where participating farmers are made to bear the costs associated with marketing risks. This is accomplished by making first payments amounting to only 60% of the anticipated sale price when a farmer submits his produce and a later second payment if gains exceed selling costs. WADU was able to get good prices for coffee, primarily due to the high quality of coffee it handled; but all ginger and most cereals from the 1971/72 seasons are still in stock because prices have been very unfavorable. CADU's marketing strategy is to create competition in grain marketing that could lead to seasonal price stabilization by undertaking a purchase and storage program. It was hoped that such a strategy would raise harvest-season prices at the time when most farmers sell their produce. During its first four years, CADU tried to achieve this by offering farmers Eth$0.50-Eth$1.50 per quintal above existing local market prices, but price stabilization was never achieved as CADU handled only a small proportion of the marketable surplus of the region. Furthermore, since the operating costs were larger than the difference between its buying and selling price, the marketing division incurred substantial losses.

12. For the 1971/72 season CADU decided to forecast the average price of wheat for the year and purchased grains by paying farmers the forecasted price less selling costs. However, the forecasted price was never realized, primarily due to unanticipated imports of wheat by the Ethiopian Grain Corporation which depressed wheat prices nationally. For the 1972/73 season it decided to let the farmers participate in bearing some of the marketing risks by offering them 90% of existing local market

price as a first payment, with a promise for a second payment if gr s were made. Unfortunately most of the farmers refused to sell their produce to CADU as they felt that they were being treated unfavorably, forcing it to revert to its original strategy of making 100% payment at the time of purchase and to bear all risks involved with unanticipated price drops.

13. There are two major reasons why the projects have been rather unsuccessful in their marketing programs. First they handle such an insignificant proportion of the total marketable surplus in their respective areas that they are not able to influence prices (for example, CADU handles only about 6% of the total marketable wheat surplus in Chilalo). Second, they can't effectively compete with private traders because their selling costs at about Eth$6 per quintal or more, are much higher than the selling costs of an average trader, at about Eth$3 per quintal or less.1/

14. Other Programs: With respect to the activities that are not directly related to raising agricultural output, CADU has been progressing satisfactorily. By October 1972, it had trained 200 assistant extension agents, 35 women extension agents and 88 trade center foremen: One of the women extension agents was trained for the MPP. An evaluation of the entire women's extension program was being planned in October 1972. But in the view of the head of the Extension and Training Department, it is difficult to assess what the impact of the entire women's program has been. The main objective of the program is to educate women on better food, better health, child care and family planning. With respect to rural water supply, CADU has undertaken extensive surveys on ground and surface water sources and has prepared a master plan for water development in the project area. Its rural health program has been integrated with the provincial health services department since 1971 because it was felt that the health facilities could be used fully. Its feeder-road program has just started, but 155 kms are expected to be completed by 1975. It is using both labor-intensive and capital-intensive methods in an effort to determine the best way of building rural roads.

15. WADU's major achievement has been in the area of soil conservation where about 130 kms of contour terraces have been completed in the highlands (using mostly local voluntary labor) to protect some 700 ha. of land from erosion. The road-building program has progressed at a slower pace than planned. Only about 130 kms of minor roads and tracks, half of which involve only maintenance of old tracks, have been completed in two and one half years. According to the project's proposal, 375 kms of new roads were planned for completion in four years. Little or no progress has been made on rural health, rural water supply, consolidation of holdings in the highlands and reduction in the number of livestock. The home economics program has just started.

16. Staffing: It is too early to make any value judgments about the MPP, but CADU seems to have gradually gathered well trained and highly motivated Ethiopian staff whose working relations with their expatriate counterparts have progressed smoothly. This should be attributed to the meaningful jobs that CADU provides and the quality of leadership at all levels of the

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1/ Appendix V

project. As the result its Ethiopianization program has been progressing satisfactorily as the number of expatriate staff declined from about 40 (1[illegible]) in 1968 to about 24 (3[illegible]) in 1972.

17. In contrast, WADU has been facing some major administrative problems. At the outset, it had difficulties hiring both expatriate and Ethiopian high-level staff. Only four of nine expatriate staff posts were filled when the project started, three of which stayed open until the project had been in operation for almost two years. It had problems retaining Ethiopian high-level staff, which not only jeopardized its Ethiopianization program but also kept several key posts vacant. Over a period of two and one half years 12 Ethiopian high-level staff have left WADU. Various reasons have been given for such a high turnover, some of which are: lack of a training component for Ethiopian high-level staff, distance of the project area from major urban centers, incompetence of some of the senior staff, unbalanced salary structure and unfair recruitment procedures.

18. Local Participation: In order to prepare farmers to become more involved in, and eventually be responsible for, taking decisions governing events and activities beyond their own farm boundaries, and in order for the projects to have long-lasting success, all three projects have programs designed to elicit participation of the target population and local authorities in the development effort. Participation of the target population is to be promoted primarily by establishing viable cooperative societies and that of local government authorities and officials by asking them to be members of committees that will be involved in making important decisions.

19. In general, the cooperative development programs are at an early stage, particularly in the MPP. CADU's efforts, though very limited, have been unsuccessful because its credit and marketing activities were not adequately integrated with its cooperative development program. Since it was providing free credit and marketing and marketing services through trade centers while at the same time trying to establish self-sufficient cooperative societies, farmers were reluctant to join cooperatives where they had to incur some costs. CADU has recently been planning to adopt a policy where credit and marketing services through trade centers will be terminated in a given area if a primary cooperative society is not established in the area within three years.

20. WADU has made good progress towards the establishment of viable cooperatives because its credit and marketing activities have been operating along cooperative lines from the outset. Besides, the Wolamo people seem to accept the concept of self-help very readily since they are familiar with various traditional group activities. However, the cooperative program has been highly subsidized so far since salaries and other expenses of WADU staff are not charged to the group marketing organizations. It should be noted, however, that farmers in Wolamo have shown more receptivity and cooperation compared to farmers in Chilalo even through WADU is poorly organized and administered compared to CADU. Part of the explanation is of course that WADU has been going out of its way to make consumption loans to farmers at a time when they need them badly.

21. Participation of local government officials and authorities has not been forthcoming as anticipated primarily because the aims of the projects are basically in conflict with their vested economic and political interests. The projects aim to create at the grass-roots level, new local-based democratic institutions (such as cooperatives and other self-help group organizations) that have a great potential to revolutionize the attitudes and the way of life of the Ethiopian peasants. In a basically feudalistic country, where owning land means owning economic as well as political power, it is in the interests of the officials to maintain the status quo. It is thus understandable why local government officials generally end up being hostile to projects like the Ethiopian packages, which by bolstering the confidence and self-reliance of the peasant are preparing him to demand his basic rights from those same officials. Stated simply, the local administrative setup under present Ethiopian conditions cannot fully accommodate the package projects.

22. Costs: CADU's Phase I costs (1967/68-1970/71 period) were Eth$13.3 million, and Phase II costs (1970/71-1974/75 period) are estimated at Eth$30.5 million. SIDA covers salaries and accommodations of Swedish staff and feasibility studies plus 67% of the remaining investment and operating costs. The Ethiopian government contributes salaries and accommodations of Ethiopian staff, land and the remaining balance of the costs. WADU Phase I costs (1969/70-1973/74) are estimated at about Eth$11.7 million of which 69.2% is to be financed by credit from IDA, 4.8% by technical assistance from UK, 2.5% by the World Food Program and 23.3% by Ethiopian government contributions. The total cost for the MPP over a six-year period (1970/71-1975/76) is estimated at about Eth$70 million. Technical assistance from SIDA and FAO and Ethiopian government contributions will cover the first three years' costs. The 1973/74 - 1975/76 period costs, estimated at about Eth$54 million, are expected to be financed by credit from IDA (81%), technical assistance from SIDA (9%), Ethiopian government contributions (7%) and down payments from participating farmers (3%).

23. The cost figures of the three projects are difficult to compare because, among other things, they have been categorized differently. In an effort to overcome this shortcoming, costs per farmer reached and costs per hectare developed were estimated for each project. A farmer was assumed to be "reached" if he was enabled to use the new technologies, i.e., if he had taken inputs on credit, and land was assumed to be developed if it has been fertilized and/or planted with improved seed varieties. Although the estimates were very crude, they show some interesting relationships. In all cases, both costs per farmer reached and costs per hectare developed were relatively higher at the beginning due to a lower rate of farmer participation and because very high costs were incurred on infrastructural facilities. Both costs per farmer and per hectare declined progressively over time as the number of participants increased. The findings show that costs per farmer (crude as they are) were gradually declining to about the same level for all three projects even though they differ in the number and intensity of their components. In fact, costs per hectare developed were gradually becoming lower for CADU than for either WADU or the MPP, indicating that the MPP may not be cheaper than the comprehensive projects after all.

24. One of the major objectives of WADU was to develop the cheapest means of undertaking planned settlements. Although the figures could not be confirmed, about 460 old settlements have been reorganized and 307 new settlers accommodated by October 1972. Even if the number of new settlements and reorganized plots increased to 1,050 and 700, respectively, by 1973/74 as was originally planned (although it seems very unlikely under WADU's present setup), the total cost of Eth$3,380 per settler, as estimated by WADU's project direction, is too high, even though 42% is expected to be recovered through a development tax on settlers over a 20-year period.

25. Benefits: The economic impact of the projects has been commendable. Incomes of participating farmers have risen considerably because yields per hectare due to improved seeds and fertilizer have doubled in most cases. Yields have increased from about 10 quintals/ha. to about 21 quintals/ha. for wheat in CADU, from about 10 quintals/ha. to about 22 quintals/ha. for maize in WADU and from about 7 quintals/ha. to about 15 quintals/ha. for teff in MP areas (19, 59, 39). The net revenues per hectare from using improved seeds and fertilizer have been estimated at Eth$126 in CADU (29) and at Eth$60 in the highlands and Eth$200 in settlements for WADU (59). The real income of farmers participating in CADU's program has been growing at about 30% per year and that for Chilalo as a whole at about 10% per year (29), compared to only 2.1% per year for Ethiopia's rural sector as a whole (47).

26. The impact of the projects with respect to the distribution of income should be viewed from at least three different angles: the distribution between tenants and landlords, between large and small cultivators and among geographic regions. Distribution of the incremental income resulting from the new technologies introduced by the projects between tenants and landlords has been skewed in favor of the landlords for the following reasons: (1) landowners were generally found to constitute a disproportionately large percentage of all borrowers, probably because they were faster adopters, (2) some tenants were displaced by machines (e.g., in CADU) and (3) there has been a shift of share-rent agreements from one-third to one-half in favor of landlords due to increased demand for land by large contract farmers and reduced bargaining positions of tenants (29).

27. With respect to the distribution of income between small-scale and large-scale cultivators, most of the incremental income has gone into the hands of the big cultivators because they are disproportionately larger users of the inputs, since the amount of inputs given on credit is directly proportional to the area a borrower cultivates. Estimates from CADU show the net revenues per hectare from the new technologies to be Eth$228 for farmers using their own machinery and Eth$117 for farmers using rented machinery, compared to Eth$126 for non-mechanized farms (29). There is no information on machinery use. But inasmuch as the larger farmers are the most likely users of modern machinery, their benefits per hectare are also very likely to be higher.

28. Regional income disparities are widened as the result of the innovations introduced by the projects. All three projects have concentrated their activities upon the most accessible and more fertile areas

which give the greatest possible response. But by virtue of the fact that they are more fertile and more accessible, these areas must already have been relatively well-off. Obviously, therefore, disparities in income between areas reached by the projects and those that remain untouched are widened.

29. Indirect Effects: No study has so far been made on indirect benefits or spin-off effects of any of the projects. However, interviews with CADU staff, local officials and farmers in Chilalo indicated that the number of children going to school, demand for schools, roads and other public services and the number of corrugated roofs have increased since the inception of CADU.

30. During 1969 and 1970 alone an estimated 500 to 550 tenant families are believed to have been evicted in the CADU project area alone due to expanded mechanization (29). It is difficult to conclude that the expansion of mechanization in Chilalo is a direct consequence of CADU since the expansion has occurred throughout the nation and since CADU abolished its tractor rental services after the first two years. It could, however, be hypothesized that CADU's effective demonstration of the profitability of agriculture could have had a considerable impact not only in Chilalo but throughout the country.

31. The interviews also indicated that food consumption in general has increased and that farmers are now buying more luxury items, such as clothes and shoes. It should be pointed out, however, that the establishment of cash market outlets for milk in the CADU project area has reduced milk consumption (a major supplier of basic nutrients) by the producing family, particularly the children.

32. Conclusion: On the basis of the high initial growth rate achieved mainly as the result of a rather rapid adoption of improved seeds and fertilizer by farmers, the Ethiopian package projects could be generally regarded as successful models for small farmer development in Ethiopia. But it is yet difficult to predict what the long-term achievements will be, because it remains to be seen if the relatively high rates of adoption of the new technologies will prevail. Besides, not much progress has been made in promoting local participation, and effective participation of the peasantry and local governments is deemed essential for long-term and sustained growth. Nevertheless, valuable lessons in highland agricultural development have been learned. Above all, the view of the Ethiopian farmer as change-resistant has been dispelled.

Recommendations

33. (a) As pilot projects, the Ethiopian package projects should provide valuable lessons for formulating and designing future projects through accurate documentation of details. Therefore, each project should have a properly organized and adequately staffed planning and evaluation unit that is able to monitor the projects' progress and to assess its

overall impact. There should also be an independent evaluation unit that coordinates the activities of the different projects and that follows up progress made by each project, the project's adherence to its work programs, the extent of target fulfillment, resource utilization, etc.

(b) Insofar as one of the projects' objectives is to reach as many farmers as possible, given the capital and skilled manpower constraints, they should strive at reducing costs per farmer reached or per hectare developed, while maintaining efficiency above a specified minimum level,

(c) Analyses of the experiences of the three package projects have shown that agricultural extension, credit and marketing ought to be integral components of any package program designed for agricultural development where institutional credit and modern marketing facilities are lacking. To be very effective, the various sections responsible for these activities should be closely integrated and probably put under the same division, in order to avoid conflicts of interest in their activities.

(d) As long as improved income distribution remains a major objective of the projects, the security requirements for credit should not exclude the poorest segment of the target population. If not completely eliminated, down payments should be made to increase progressively, both over income class and over time. For example, the lowest income class may pay no down payment the first year, 10% in the second year, 15% the third year, etc.

(e) To maintain the rather high repayment rates the projects have been able to attain so far, more stricter repayment enforcement measures should be taken. Local governments should fully cooperate with the projects in taking defaulters to court. In addition, it is at least worthwhile trying WADU's system of providing credit for consumption purpose right before harvest in order to stop the inevitable borrowing by farmers from local traders and money-lenders at exorbitantly high interest rates.

(f) Dedication and motivation of extension workers and other staff is very essential for the success of the projects. It is therefore important that the projects have means of rewarding their staff (financially and/or through further training) on the basis of some measure of performance in order to maintain a high level of motivation.

(g) Too much is being expected of cooperatives too soon. Where the majority of farmers are illiterate and subsistence-oriented, it is difficult for cooperative societies to successfully undertake marketing operations and make sufficient profits to be able to compete with private traders. Without government subsidy, cooperatives do not have sufficient resources to survive a season of poor crops or a season of weak markets. Furthermore, the cooperative members are not fully aware of the loyalty their cooperative societies need from them.

(h) Thus, instead of totally relying on cooperatives, the projects should simultaneously attempt to improve the private marketing

system. The attack on marketing problems should include improvement of infrastructures such as rural roads and storage and enforcement of standard weights and measures. It should also be realized that the private sector can do a better job only if it gets access to sufficient credit and technical assistance. For example, the Ethiopian Grain Corporation could be reorganized under a highly skilled management and financially enabled to undertake an effective grain purchase and sale program in order to minimize seasonal price fluctuations. It could further improve the performance of the private marketing sector by leasing its storage facilities to farmers, cooperatives and small traders. In general, its activities could provide enough competition to large merchants and consequently strengthen the position of retailers and small traders. In addition, the private marketing sector could be given access to credit from the commercial banks or the AID Bank to finance inventory, working capital, transportation and storage facilities.

(i) The eventual success of projects like the Ethiopian package projects, started with a considerable amount of external technical and financial assistance, is in jeopardy if plans are not made from the beginning and given timely implementation, so that the projects become self-sufficient and continue to progress undisturbed after assistance is withdrawn. This necessitates a carefully planned phasing-out program where the level of assistance is designed to decline gradually instead of being withdrawn abruptly.

(j) One of the reasons no great headway has been made by any of the projects with respect to eliciting local participation is that the essential institutional reforms that would have favored the projects' planned cooperation with local administration have not materialized as envisaged during project preparation due to political inaction on the part of the Ethiopian government. Therefore, when launching similar development projects in the future, it is advisable to make sure that development-oriented local government officials are brought to the area.

(k) The effects of the new technologies introduced by the projects were heavily dependent on the institutional framework in which they operated. For example, tenant eviction was partly caused by the new technologies as they attracted mechanization by making agriculture profitable, because landlord-tenant relations are highly biased in favor of landlords who can terminate lease agreements at will. Similarly, the new technologies tended to further concentrate incomes in the hands of a few because existing institutional arrangements do not provide equal access to all production inputs (including land) for all potential users. Thus, since technological effects are greatly determined by specific institutional configurations, alteration of institutions would permit different effects. With respect to land tenure, for example, any land reform measure that at least abolishes the share-cropping system in favor of fixed rent tenancy and enforces written long-term lease agreements, tenant compensation for improvements made and proportional sharing of production costs between landlord and tenant would lead to a relatively more equitable distribution of benefits generated by the new technologies between landlord and tenant.

Transferable Lessons from the Projects

34. The operation of CADU, WADU and the MPP provide a number of transferable lessons for the design and implementation of rural development projects.

(a) The operation of CADU shows that a successful pilot project should include a research division to develop appropriate seeds and tools which can then be propagated over the country. But for the technology to benefit the poorer sections of the population, proper attention should be given to the prevailing social conditions. Otherwise improved technology may lead to eviction of tenants, landlessness and unemployment. The pilot project can also be used to train extension staff.

(b) The projects show the necessity of having a well-trained extension staff in order to transmit the techniques. But in order to properly motivate the extension staff there should be an incentive system so that promotions and salary increases are predicated upon some achievement index.

(c) The intensity of the extension services, however, increases staff requirements and pushes up the costs of reaching farmers. Thus, given the skilled manpower and financial constraints, it should be difficult to extend the system over the entire country. Ways to reduce the costs have to be studied and implemented if we are to have rural development projects which are to reach the mass of the rural poor.

(d) The large costs and the manpower requirements of the integrated schemes might restrict the projects to only some areas of the country. Though this might be acceptable for a pilot project, it raises the questions of regional equity because only some people benefit. CADU and WADU show that the benefits are substantial but that these are not taxed, so that there is no increase in the ability of the government to carry out similar projects in other parts of the country. So it is essential to devise ways to tax the increased incomes.

(e) The provision of services like credit and marketing should be undertaken after examining how essential these are to the overall project and how they can best be provided. The example of both CADU and WADU show how difficult it is to operate a successful marketing unit cheaply when the project unit supplies only a small part of the marketable surplus of the region and has no voice in devising the grain policy for the region. The project experience also shows that it might be difficult to modify the marketing setup once it has been initiated, as the participating farmers may then feel that they are being unfairly treated. The marketing experience shows that it might be more efficient to use the existing private marketing system by improving its operation through construction of infrastructure for transportation and storage and provision of market information.

(f) In the provision of credit the two important problems are providing facilities to all sections of the population and ensuring repayment of the credit. But these two objectives may be incompatible. In the

design of projects, assurance of repayment of credit is often sought by providing credit only to the credit-worthy, and credit-worthiness is judged by the ability of the recipient to provide security and a certain amount of down payment. But the poorest sections of the population are unable to provide the security or raise the down payment. The experience of CADU shows that such requirements do prevent the participation of the poorer sections, and the operation of WADU shows that down payment requirements are not necessary for a high repayment rate. The provision of consumption loans by not preempting the farmer's income for repayment of high interest loans also seems to lead to a better repayment performance. The use of local committees for judging credit worthiness of farmers is more satisfactory as they are in a better position to judge the farming capacities of the individual, which might be a better guarantee of repayment than financial ability, particularly as it is often the richer farmers who default on their loans. The group approach has also been extended to repayment in the case of WADU. The entire village is considered responsible for credit repayment. Such group approaches might be made more efficient particularly by mobilizing the available local talent and could reduce the costs of such projects.

(g) Local participation in administration is often sought by establishing cooperatives. But the operation of cooperatives is very often not successful where farmers are illiterate and there is a lack of experience with democratic institutions and group decision-making.

(h) The experiences of CADU and WADU, however, show how essential it is to train local administrators to take over once the expatriates leave, if the projects are to be self-sustaining. For this training it is essential that the local administrators work in the project from the beginning and gradually take over the duties. The projects also show the difficulties of working with the local government administration and the necessity of instituting regular procedures to be able to cooperate with it.

I. INTRODUCTION

1. This review of the Ethiopian package programs is part of the "Africa Rural Development Study" (ARDS), which is designed to analyze a number of rural development projects in Africa, with a view to examining their implications for future World Bank Group operations. The overall objective of the ARDS is to identify, evaluate and describe the essential components and characteristics as well as the phasing of projects and programs designed to affect the quality of life of large numbers of people within a reasonably short time.

2. The study is planned to proceed in three phases, Phase I of which has been restricted to a review of selected projects and of the lessons to be drawn from them. In order to reflect a variety of experiences and to explore as many as possible of the major elements believed to be significant in promoting the goals of rural development, the study encompasses several Bank and non-Bank projects in several African countries south of the Sahara.

3. Based on differences in the study approach, the reviews have been categorized as substantive and partial. The partial reviews include projects that have already been evaluated extensively or projects that are too new to present enough material for a comprehensive evaluation. For the substantive reviews, which include the Ethiopian package programs, each project has been carefully selected so as to illumirate a particular and important approach to rural development. It is hoped to draw lessons about the possibility of transferring successful experiences elsewhere, as long as the success of the projects being reviewed depends on the approach and not on a unique environment within which they operate.

4. The purpose of the substantive reviews is therefore to assess the size and distribution of benefits from the projects, the breadth of participation of the different socio-economic classes in the projects and the role of institutions in the performance of the projects. Each review has to identify the factors responsible for the economic benefit and for the degree of participation. On the basis of the reviews, it is hoped to draw lessons as to how best to design projects in given circumstances to meet certain criteria of rural development, involving economic benefits and a broad degree of participation.

5. In line with the overall objectives of Phase I of the ARDS, a comparative review of Chilalo Agricultural Development Unit (CADU), Wolamo Agricultural Development Unit (WADU) and the Minimum Package Program (MPP) follows. This review compares the packages with respect to their components and the degree of intensity of the components in terms of their contribution to the improvement of the living conditions of the rural population . The study is based on secondary sources of information in the form of published

and unpublished documents available within the International Bank for Reconstruction and Development (IBRD), project headquarters of the different projects, research stations and other Ethiopian Government agencies. Field visits were conducted for discussions with various project staff and farmers, and discussions were held with persons involved in implementation and evaluation of the projects for additional information.

II. EVOLUTION OF THE PACKAGE PROGRAMS

6. Because the Ethiopian economy is predominantly dependent on agriculture, development strategies and policies have been giving priority to the modernization and expansion of agricultural output to maximize the economic growth of the nation.[1/] Most of the development plans stressed development of peasant agriculture because less than 9% of the total agricultural output comes from the commercial farming sector (52). However, welfare considerations such as improvement in the distribution of income and creation of employment were only viewed as desirable concomitants of the development policies, and they were never incorporated as major policy objectives.

7. Agricultural development programs proposed in the earlier five-year plans emphasized large-scale commercial farming as the major means of growth in output. They implicitly assumed that the most efficient means to more rapid growth was through the use of capital-intensive techniques introduced by commercially oriented farmers. This view was corroborated by the ineffectiveness of efforts to develop peasant agriculture by means of isolated lines of attack, without proper coordination. Agricultural research institutions without adequate seed multiplication and distribution facilities, availability of improved seeds and fertilizers without provision of credit and organization of marketing facilities without improving the means of production, transportation and communication have proven to have no significant impact on the economy. This result led many assistance agencies such as the Food and Agriculture Organization (FAO), IBRD, and the United States Agency for International Development (USAID) to suggest that Ethiopia adopt the package approach by concentrating its efforts on more promising regions, if it were to meet even the need for the bare necessities of the overwhelming majority of its population, which is engaged in small-scale farming.

Evolution of CADU

8. The Ethiopian Government did not make any firm decision on the suggestion made by the assistance agencies. However, it showed considerable interest in advancing the suggestion further. This willingness to try the package method on the part of the Ethiopian Government encouraged the Swedish Government to act favorably on Ethiopia's request for agricultural assistance because Sweden itself was interested in trying the method as a means of providing development assistance to Less Developed Countries (LDCs). Such

1/ The agricultural sector employs about 90% of the country's labor force, generates about 60% of the total GDP and accounts for over 95% of the export earnings.

mutuality of interest between the two governments led to the formation of a team of Swedish experts to undertake an investigation of the possibilities for a regional agricultural development program in Ethiopia.

9. From its previous reviews of several projects in different countries (including Comilla in Bangladesh and the Intensive Agricultural Districts in India) and its detailed investigation of Ethiopian conditions, the team concluded that the effects of any developmental activity in isolation would probably not be significant. The team found that locally tested innovations should be available as a basis for any extension effort, and the farmers should [illegible] these innovations. Therefore, not only should the innovations be experimentally developed in the area, but they should be made available to farmers on credit at reasonable costs, and the farmers should be able to sell their produce at a fair and secure price.

10. On the basis of the conclusions derived from the preliminary investigations, the Swedish and Ethiopian governments agreed to choose an area for a joint regional development project where essential elements of development would be applied in an intensively integrated package approach. The Swedish project preparation team indicated its preference for Chilalo Awraja in Arussi Province mainly because it seemed best suited to Swedish experience: the main potential of the area was in grains, field crops and animal production. The Ethiopian Government accepted the team's preference for Chilalo. The Swedish International Development Association (SIDA) submitted the general project outline in October 1966, and it was accepted by the Ethiopian Government, with few modifications, in March 1967. A detailed project proposal was submitted in June 1967, and an agreement between the Swedish and Ethiopian governments was signed on September 8, 1967, to implement the proposed program under the name of "CADU". The first agreement covered three years, and the second agreement, which ends in 1975, covers five years. But it was originally envisioned that, if successful, the project might have a continued life of up to thirteen years.

Evolution of WADU

11. The Wolamo Agricultural Development Unit was effectively established in April 1970. Although Wolamo Awraja was high in the priority list of areas selected for package programs as envisioned in the third five-year plan, it was the strong personality of the Awraja Governor that was instrumental in the establishment of WADU. Wolamo Awraja, one of the most densely populated areas in the nation and part of a large homogenous region that needed improvement in its agricultural activities, was believed to be an area where any rural research and development program would have maximum impact. It was felt to have the most suitable agricultural project for consideration by the International Development Agency (IDA), mainly because the local administration was ready to support the project wholeheartedly and the area population was interested in the development effort. 1/

1/ This suggests that local interest in the projects is greater in the case of WADU than in that of CADU. A detailed explanation is given on the section of local participation.

12. Preparation of the project, which lasted more than two years, was done by an appraisal mission composed of IDA staff from the Permanent Mission in East Africa and the headquarters in Washington, and the FAO/IBRD cooperative program. WADU was the Bank Group's first attempt to finance agricultural development in Ethiopia. The team found it difficult to formulate and prepare the project because of the unsatisfactory state of the institutional and administrative structure for agricultural development in Ethiopia. The Credit Agreement between IDA and the Ethiopian Government that would cover the first six-year phase of WADU was signed on November 26, 1969, but did not become effective until April 30, 1970.

Evolution of the MPP

13. Even though the CADU and WADU type of projects, which are known as "comprehensive" projects with their many-faceted development approach applied to limited areas, are an essential part of the development process, they are too costly in terms of finance and trained manpower. For this reason, the concept of the "minimum package" was developed. It implies concentration of efforts on a few proven innovations (such as fertilizer and improved seed varieties) in addition to a supervised credit program. Within the constraints of available manpower and financial resources, the MPP aims to benefit as many peasant farmers as possible over large areas, employing methods and innovations developed and tested in the comprehensive projects. Thus, CADU and WADU act as pathfinders for the MPP in that they develop and test new extension techniques and innovations to be distributed in the MPP areas.

14. In order to administer a nation-wide extension program using the minimum package approach as well as to supervise and coordinate the comprehensive projects, the Extension and Project Implementation Department (EPID) was established in 1971 with the assistance of SIDA (40).1/ The Extension Division of EPID operates the MPP in areas selected for intensified extension activities on the basis of availability of tested innovations suitable for the area; favorable demand prospects for products that can be grown in the area; importance of small-scale farming in the area; accessibility of small-scale farming in the area at all times, i.e., availability of an all-weather road passing through the area; past experience in the area with respect to its farmers' response to newly introduced innovations; attitudes of the area farmers toward change.

1/ With the establishment of EPID, all other previous extension programs were terminated.

III. STATED GOALS OF THE PROJECTS

12. Performance of the projects will be examined in the context of the stated aims and objectives. Therefore a brief review of the goal hierarchy of the three projects is warranted prior to any detailed presentation of the evaluation.

13. All three projects aim to raise the productivity and standard of living of small-scale farmers. They aim to achieve these goals by providing farmers with technical advice through their extension programs, by providing farmers with improved inputs on credit at interest rates much lower than alternative sources and by improving the farmers' position in the market. Thus, the stated goals of the three projects are quite similar. In fact, the goals of CADU and the MPP are identical since the MPP was modeled after CADU and probably since both projects were prepared with technical assistance from SIDA.

The Main Goals of CADU and the MPP

14. Since CADU and the MPP have the same set of goals, the following list refers to both of them. The three main goals in order of precedence are:

(a) Achievement of economic and social development throughout the project area, where activities toward this end will be conducted such that:

  (i) The participation of the area population in the Project's activities and their assumption of more and more responsibility is enhanced

  (ii) Adverse employment effects are avoided, and wherever possible additional employment opportunities are created

  (iii) Project activities are directed mainly toward farmers in the low-income brackets

(b) Continuous search for suitable methods to further agricultural development in the project areas and in other parts of Ethiopia

(c) Training of Ethiopian staff and creation of possibilities for applying the experiences gained at CADU in other parts of Ethiopia.

The Main Goals of WADU

15. The main distinguishing feature of WADU from both the MPP and CADU is that, in addition to attempting to raise the incomes of small

farmers in the highlands of Wolamo, it undertakes a settlement scheme in the lowlands. Its two major goals are:

(a) Raising the cash income per farm-family of about 6,000 small-scale highland farmers from Eth$200 to Eth$325 by year nine

(b) Establishing 1,750 settlers[1/] in two lowland areas of Wolamo (Abella and Bele) so that each settler will obtain an annual cash income of about Eth$[illegible] by year nine

16. In addition to raising incomes of small highland farmers and settlers, the project was expected to:

(a) Help bring about a shift from subsistence to monetized agriculture

(b) Increase the government's tax revenue as a result of the farmer's increased income

(c) Demonstrate the impact of development efforts and provide data for the formulation of other development projects in Ethiopia

IV. PROGRAMS AND MEANS OF DEVELOPMENT IN CADU

Development of Innovations

17. Applied research, designed to develop innovations, is an important component of the CADU package of activities. CADU has successfully developed high-yielding crop varieties (mainly wheat) adaptable to different soil and climatic conditions. Tables 1 and 2 show CADU's impact in introducing high-yielding varieties and better cultural practices. CADU is also making good progress in developing improved corn and rapeseeds.

18. After attempts to introduce tractor services were found to be socially undesirable because they led to tenant eviction, and since the economic profitability of using tractors, either through increased yields or reduced costs, was found to be insignificant compared to using improved local plows (2), CADU became reluctant to introduce totally foreign farm implements. Its Agricultural Engineering Section has been working to improve the labor-intensive animal-drawn local farm implements and to train local artisans who make and maintain the improved implements. It has improved the local plow, developed an animal-drawn harrow, designed a new hand hoe, developed a stationary thresher and introduced wheelbarrow and

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1/ 1,050 were to be in new settlements and 700 in re-organized settlements.

ox-drawn carts. An experiment conducted by CADU's Agricultural Engineering Division has shown that using the improved oxen-drawn plow on heavy soils results in a E-h$39 per hectare reduction in costs compared to the traditional plow, and using oxen-drawn spike-tooth harrows to cover the soil results in 2-3 quintals/ha. additional output (2). With respect to livestock development, CADU concentrates on upgrading dairy cows and sheep. Upgrading beef cattle is temporarily ruled out because grazing area is limited, a domestic market for high-quality beef is not available and the possibilities for exporting beef under present conditions are extremely limited.

Table 1: COMPARISON OF YIELDS IN THE CADU PROJECT AREA, 1968-70

(in q/ha.)

Crops	1968	1969	1970
Local wheat, not fertilized	9.8	12.1	13.1
Improved wheat, not fertilized	-	16.9	14.5
Improved wheat, fertilized	-	20.0	19.2
Local barley, not fertilized	13.0	15.3	15.9
Local barley, fertilized	-	-	19.2
Local beans, not fertilized	22.5	22.8	18.4
Local flax, not fertilized	3.5	4.9	6.0

Source: CADU Crop Sampling Surveys, 1968, 1969, 1970

Table 2: COMPARISON OF YIELDS FOR SELECTED WHEAT VARIETIES, CADU, 1970

(in q/ha.)

Wheat Variety	Northern Project Area	Southern Project Area
Local wheat, not fertilized	15.7	7.1
Yaktana 54, fertilized	21.9	11.9
Supremo, fertilized	20.3	17.0
Kentana Frontana, fertilized	25.3	17.0
8156, fertilized	25.7	-

Source: CADU Crop Sampling Survey, 1970.

19. A continuous decline in the number of dairy cattle and grazing land has been noticed within the CADU project area primarily due to higher returns in crop production. This may raise questions on the validity of the efforts to improve livestock. Even though under present conditions an extra dollar spent for crop production seems to be more profitable than that spent on livestock, it does not necessarily mean that the relative profitability of crop production is everlasting. The marginal benefit of a dollar spent on crop production will start to decline after a point in favor of that spent on livestock. Besides, it can be hypothesized that as incomes of the target population continue to rise and people's knowledge about nutritional values of various products continues to improve, their demand for livestock products vis-à-vis other products will keep on increasing.

Extension Activities

20. All three projects have intensive extension programs as a means of introducing the proven techniques to farmers. CADU's extension program operates through "model farmers", each of whom is selected from five candidates provided by farmers living within a designated 800-hectare area. One extension agent, trained at the intermediate agricultural colleges of either Jimma or Ambo, and two assistant extension agents, trained at CADU's Training Center, are responsible for a maximum of 15 model farmers within one "extension area".

21. The extension agents advise model farmers on various cultural practices and on how to use the improved inputs. In addition, they hold periodic field days to demonstrate the value of improved seeds, fertilizer and other innovations to all interested farmers within an extension area. Field days held on the plots of model farmers and on demonstration plots are usually strategically placed on the side of a main road, near markets or near churches.

22. The number of extension areas in CADU has increased from 7 in 1968/69 to 31 in 1971/72. Since each extension area consists of 1,000 to 2,000 farm families, CADU's extension program had potentially covered an area of about 30,000 to 60,000 (or an average of 45,000) farms by the end of the 1971/72 season. If SPID's assumption that at least 75% of all farmers in an MPP area will fully participate in its activities within 10 years is also assumed for CADU (41), and if the number of extension areas remains at 31, it can be hypothesized that at least 34,000 farmers will be reached by 1975.

23. If the number of farmers reached refers to those farmers that were actively participating in CADU's activities, i.e., those that took credit, then Table 3 shows a total of abour 15,000 farmers were estimated to be reached during the 1972/73 season.

Table 3: NUMBER OF FIELD STAFF AND FARMER/FIELD STAFF RATIO FOR CADU'S EXTENSION PROGRAM, 1972-73 /a

Staff Category	Number
Supervisor	1
Extension agent	32
Assistant extension agent	64
Marketing foreman	32
Model farmer	400
Participating farmers	15,000
Farmers/extension agent	470
Farmers/assistant agent	235
Farmers/marketing foreman	470
Farmers/field staff	113

Source: CADU Annual Report 1971/72 and CADU Tentative Program 1970-75.

/a All figures are approximations. The number of farmers reached refers to those who participated in CADU's credit program so that figures comparable to those of WADU could be derived.

Farm Credit

24. Forms of Loans and Source of Funds: All loans from CADU are given in kind. The short-term loans are given in the form of fertilizers, improved seeds, insecticides and livestock feed. The medium-term loans are given in the form of improved farm implements and upgraded dairy heifers.

25. The Agricultural and Industrial Development Bank (AID) provides the inputs to CADU (as well as to WADU and the MPP) on a one-year term basis at an interest rate of 10% per year. CADU charges farmers 12% per year, with the extra 2% being intended to cover risk and supervision costs.

26. Eligibility for Credit: During its first two years CADU allowed all categories of farmers (owner-cultivators as well as tenants and large-scale farmers as well as small-scale farmers) to participate in its credit program. However, experience during the first two years indicated that benefits from the credit program were being distributed disproportionately in favor of the bigger cultivators.

27. In 1970, CADU decided to exclude from its credit program all land-owners cultivating over 25 ha. and all tenants cultivating over 40 ha. By 1972, it had lowered the limit to 20 ha. for owner-cultivators and 30 ha. for tenants.

28. Security Requirements: CADU requires down payments for its loans. Initially, its down-payment requirements varies from 25% to 75% of the value of inputs (31 . Recently, however, a more specific down-payment requirement has been stipulated. The down-payment for improved seeds is 50% for all categories of farmers. The required down-payment is 25% for fertilizer for landowners cultivating less than 5 ha. and tenants cultivating less than 8 ha, while for all other eligible farmers it is 50%. In addition, CADU has a minimum loan limit of Eth$50, but no maximum limit.

29. Each borrower is required to provide two guarantors. For tenants, one of the guarantors has to be the landlord himself. In addition, tenants are required to sign a lease agreement with their landlords in order to qualify for CADU credit. To further ensure timely repayments, no farmer is eligible for more credit until he has settled all previous loans; and it has recently been proposed that all farmers from a given model-farmer area, as a group, will not be eligible for future credit if their repayment rate two months after due date is less than 90%.

30. Screening of Credit Applicants: Processing of credit applications is done by extension agents with the help of the "Model Farmer Area Development Committees" (MFADC) 1/ and the Credit and Marketing Division. The screening process is schematically elaborated in Figures 8 and 9 of Appendix VII, and it can be briefly summarized as follows:

(a) Applicants fill out application forms with the help of the extension agents.

(b) Extension agents process all applications with the help of the MFADC and forward the recommended ones to the extension supervisor.

(c) The extension supervisor passes the recommended applications to the Credit and Marketing Division, after making all necessary checks.

(d) The Credit and Marketing Division determines the rate of down-payment as per policy and prepares loan agreements to be signed by the farmers and their guarantors.

31. Disbursement of Inputs: The AID Bank supplies inputs (mainly fertilizer and insecticides) to all package projects.2/ Disbursements within CADU are done through "trade centers," which are scattered throughout the project area in such a way that they are within an easy distance of as many farmers as

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1/ A detailed analysis of the Model Farmer Area Development Committees is given in the section on local participation.

2/ Agricultural Inputs and Marketing Services (AIMS), a subsidiary of the AID Bank, is to have a monopoly power in all input procurement and distribution activities.

possible. The number of trade centers within the CADU project area has increased from only 7 in 1968 to 32 by the end of 1972, primarily due to the rapid expansion of area covered by extension activities. Each eligible farmer can get the desired inputs from the closest trade center after signing a credit agreement and making the necessary down payment.

Performance of the Credit Program

32. Number and Amount of Loans[1/]: Table 4 gives a yearly breakdown of the number, amount and average size of loans. After a rapid increase in both the number and amount of loans from 1967/68 to 1970/71, there was a gradual decline in the quantities of inputs distributed on credit, the number of loans, the amount of loans and the average size of loans.

Table 4: NUMBER OF LOANS, AMOUNT OF LOANS, AVERAGE LOANS AND QUANTITIES OF INPUTS DISTRIBUTED ON CREDIT, CADU, 1967/68-1972/73

Crop Year	No. of Loans		Amount of Loan		Average Loan		Quintals of Inputs	
	No.	% Increase	Eth$	% Increase	Eth$	% Increase	Seed	Fertilizer
1967/68 /a	189	-	15,700	-	83	-	977	49
1968/69	868	359.26	158,460	909.31	180	116.87	4,515	2,577
1969/70	4,769	449.42	502,876	217.25	106	(-41.11)	7,925	15,308
1970/71	14,077	196.62	1,395,703	185.86	102	(- 3.77)	13,500	46,000
1971/72	14,146	(- 0.53)	1,437,517	(-2.91)	99	(- 2.94)	4,561	34,990
1972/73	12,623	(-10.28)	1,108,632	(-20.57)	88	(-11.11)	2,894	35,519

Source: CADU annual reports and CADU's Credit Section files

/a The first crop year, lasted only a few months, was really an experimental year and does not reflect normal situations. For example, the small quantity of fertilizer distributed compared to seed is due to the late arrival of fertilizer and does not reflect less demand for fertilizer than for seed.

33. The decline in the number of loans, amount of loans and quantities of inputs distributed on credit is in one way related to the marketing problems

1/ Since CADU gives only one loan per farmer per year, the number of loans corresponds exactly with the number of credit-takers.

of the project, which are discussed in some detail in the marketing section of this report. During both 1971 and 1972, the continuous decline in grain prices throughout the country (particularly that of wheat resulting from large quantities of imports by the Grain Corporation) forced CADU's Marketing Division to offer farmers prices lower than those of previous years. Local traders and big landlords,1/ whose vested interests were in conflict with CADU's major aims, took advantage of the situation by campaigning against CADU and telling farmers that CADU was really trying to make profits by offering them lower prices than it had in the past. To prove their point, they pointed out that CADU was charging farmers extremely high prices (about Eth$40 per quintal) for its improved seed varieties but paying only half as much when buying back the same varieties from them. This is a convincing argument to farmers who have little understanding of the costs involved in developing new high-yielding seed varieties. As the result, many farmers are believed to have decided not to take any credit from CADU.

34. Another reason for the decline in the number of credit-takers is that many farmers did not see the need to fertilize their plots year after year. Many felt that, once applied, fertilizer would keep on increasing yields for many seasons. In addition, many farmers began buying their seeds from other farmers (who had grown high-yielding varieties developed by CADU) at prices much lower than those offered by CADU's Seed Division for what was probably a better variety, and many others were reusing the seeds they bought from CADU in previous years.

35. The continuous decline in the average size of loans is primarily due to the changes in the project's credit policies. If we assume that all farmers closely follow the recommended rates of fertilizer and seed application (CADU recommends 100 kg. of fertilizer and 125 kg. of wheat seed per hectare), it can be seen how the size of loans is determined by the size of area cultivated (or owned). When there was no restriction on eligibility for credit during the early life of the project, a large proportion of the credit-takers were big cultivators. This led to a larger average size of loans for the earlier years compared to that of recent years, when stricter credit policies excluded the bigger cultivators.

36. Distribution of Credit among Different Classes of Farmers: Given the considerable expansion in the numbers of credit-takers as well as the amount of loans, we next attempted to analyze how the loans were distributed among different income classes.2/ Since land is the major source of income, area owned is used as a proxy for income. Area owned is preferred to area

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1/ CADU's credit policy had by this time excluded the big landlords from participating in its credit program.

2/ Distribution of project benefits among different income classes, which is highly related to the distribution of credit, is discussed in detail in a separate section below.

cultivated because a landowner has opportunities for additional income from land he may not directly use but rent out to tenants, and a tenant's income is not correctly reflected by the area he cultivates since he has to give away a third or a half of his earnings as rent payments.

37. As one would expect, the average quantities of seed and fertilizer used by different income classes increased with the area owned (Table 5). But whereas in 1967/68 the increased usage of seed was almost directly proportional to larger farm size, in 1969/70 the larger farms were using relatively less seed. In the case of fertilizers we have the opposite picture: in 1967/68 the 21 to 40 ha. farms used the least amount of fertilizer but by 1969/70 were using the most fertilizer, though they were still using less of it per acre. Thus the larger farmers are now using more fertilizer and less seed than they were using earlier. This could be because they are using their own seed. However, owner-cultivators are the only category which consumed less fertilizer on the average in 1969/70 than in 1967/68.

38. Since crop sampling surveys have shown positive net returns to both fertilizer and improved seed (2, 18, 20), the absolute income increases must have been larger for those farmers who either owned and/or cultivated larger tracts of land.

39. The distribution of loans among different income classes is influenced both by the proportion of credit-takers from the various classes and by the shares of the various income classes in the loans actually made.

40. An analysis of the relative distribution of credit among income classes shows that the proportion of credit-takers, as well as the proportion of the total amount of credit, has been moving constantly in favor of small-scale farmers as credit policies restricting bigger landlords were adopted (Table 6). Even though tenants in Chilalo are estimated to be 50% of all farmers, they constituted only 8.5% and 15.4% of all credit-takers in 1967/68 and 1968/69, respectively. However, their proportion rose to 32.3% in 1969/70 and to 38% in 1970/71 mainly because CADU limited its credit to small tenants and owner-cultivators after the 1968/69 season. Thus their share as credit-takers is approaching their proportion in the agricultural population, but the down-payment and security requirements prevent the poorest sections of the rural population from participating in the credit program. Among those receiving credit, cultivators of the larger tracts require larger quantities of the various inputs and hence a relatively larger proportion of the loans. This can be clearly seen from Table 6 where, for example, owners of over 20 ha. of land, who are a very small minority of Chilalo farmers and constituted 2.0% of all credit-takers in 1967/68, took 56% of the total loans distributed that year.

41. The revised credit policy influenced the distribution of loans in two ways. First, the exclusion of large-scale farmers from the credit program meant that more funds were now available to meet the needs of small-scale farmers. Second, the amount of loans that were meeting the needs of of a given number of large-scale farmers can now meet the needs of a relatively larger number of small-scale farmers. For example, in 1968/69 cultivators of less than 20 ha. constituted 83% of all credit-takers but

Table 5: DISTRIBUTION OF THE AVERAGE QUANTITIES OF SEED AND FERTILIZER AMONG DIFFERENT INCOME CLASSES, CADU, 1967/68-1969/70

Area Owned (ha.)	1967/68 No. of Farmers	1967/68 Seed (g)	1967/68 Fertilizer (g)	1968/69 No. of Farmers	1968/69 Seed (g)	1968/69 Fertilizer (g)	1969/70 No. of Farmers	1969/70 Seed (g)	1969/70 Fertilizer (g)
Tenant /a	16	2.3	2.0	134	2.66	1.31	1,540	1.59	2.47
1-10	81	2.0	4.0	438	3.53	1.66	1,903	1.82	2.92
11-20	36	4.7	3.3	144	7.42	3.63	441	3.08	5.62
21-40	21	12.0	2.0	66	9.58	4.98	179	3.25	7.10
Above 40	18	18.4	6.0	54	15.39	29.80	54	3.67	9.59
Unclassified	17	1.8	-	32	8.33	3.06	652	1.69	2.62
Total	189			868			4,769		

Source: Compiled from the CADU Credit Program, 1968-1971.

/a Ninety percent of the tenant credit-takers in 1969/70 cultivated less than 6 ha. (3).

Table 6: DISTRIBUTION OF CADU CREDIT AMONG DIFFERENT INCOME CLASSES, 1967/68-1970/71

	1967/68				1968/69				1969/70				[illegible]			
	Credit Takers		Credit		Credit Takers		Credit		Credit Takers		Credit		Credit Takers		Credit	
Area Owned (ha.)	No.	%	Eth$	%	No.	%	Eth$	%	No.	%	Eth$	%	No.	%	[illegible]	%
Tenant	16	8.5	610	3.9	134	15.4	7,760	4.9	1,540	32.3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1-10	81	42.0	2,720	17.3	438	50.5	39,715	25.1	1,903	39.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11-20	36	19.0	2,925	18.6	144	16.6	32,160	20.3	441	9.3	[illegible]	[illegible]	389	[illegible]	[illegible]	[illegible]
21-50	21	11.1	3,705	23.6	66	7.6	18,275	11.5	179	3.8	[illegible]		54	[illegible]	[illegible]	[illegible]
Above 50	18	9.5	[illegible]	[illegible]	54	6.2	54,660	[illegible]	54	1.1	[illegible]	[illegible]	-			
Unclassified	17	8.9	595	3.8	32	3.7	5,890	3.7	652	13.7	[illegible]	[illegible]	-	-		
Total	189	100.0	15,700	100.0	868	100.0	158,460	100.0	4,769	100.0	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]

Source: [illegible] of the 1967/68-1970/71 Credit Program and files of CADU's Credit Section.

accounted for only 90% of the loans. By 1970/71, however, not only did they make up 99% of all credit-takers but they took 98% of the total loans.

42. The distribution of credit corresponds to the amount of land cultivated so that all farmers receive almost the same amount of credit per hectare.

43. Analysis of the Down-Payment Requirements: CADU's required down-payments were from the outset planned to increase progressively with the incomes of borrowers. However, the actual down-payment figures during 1967/68 and 1968/69 give a different picture. The down-payment/value of inputs ratio indicates that on the average down payments were about 42% of the total value of inputs distributed on credit in 1967/68, about 38% in 1968/69, and about 42% in 1969/70 (Table 7).

44. The ratios also indicate that the down-payment rate was more or less the same for almost all classes of credit-takers in 1967/68. It ranged from 36% for the 1 to 10-ha. owners to 45% for the 21 to 40-ha. owners. In fact, landlords owing over 40 ha. paid only a slightly higher down-payment of 43% compared to 40% for tenants. During 1968/69, regressive down-payments rates were actually operational. The table shows that tenants paid 35% down payment, compared to only 22% for landlords owning over 40 ha. The probable explanation for this discrepancy is that the 25-75% down-payment requirement created when the initial credit regulations were laid down allowed too wide a margin for individual discretion. Furthermore, in an attempt to induce as many farmers into the program as possible and thus to demonstrate the value of inputs sufficiently, regulations were not always closely followed.

45. The impact of the revised credit program, where clear-cut rules and regulations in line with the stated aims of the project were set during the 1969/70 season, can be clearly seen in the progressive nature of the down-payments made by different classes of farmers. Table 7 shows that the average down-payment during 1970/71 ranged from 30% for tenants to 54% for the bid landlords.

46. Credit Repayment Performance: It is generally believed that low-income borrowers are higher credit risks than high-income borrowers. Because of their higher propensity to consume, they are alleged either to divert production credit to consumption or to use their increased income for consumption rather than repayment of credit. This reasoning probably justified the requirement for down-payments in the case of CADU (as well as the MPP). It is further argued that farmers feel a greater sense of responsibility for their debts when they have to make down-payments.

47. An analysis of the repayment performance at CADU shows that small farmers are by no means worse defaulters compared to large farmers. Although the proportion of tenants who took credit during the 1967/68 season was only 9%, all of them paid back their loans by due date (Tables 8 and 9). In contrast, 60% of the loans outstanding at due date were attributed to the big landlords who made up only 10% of all credit-takers (Table 9).

Table 7. RATIO OF DOWN PAYMENT TO THE VALUE OF INPUTS FOR DIFFERENT CLASSES OF FARMERS, CADU, 1967/68-1969/70

Area Owned (ha.)	1967/68 Credit (Eth$)	1967/68 Down payment-Value Ratio	1968/69 Credit (Eth$)	1968/69 Down payment-Value Ratio	1969/70 Credit (Eth$)	1969/70 Down payment-Value Ratio
Tenant	610.05	.3960	7,761.43	.3451	138,949.19	.3904
1-10	2,717.15	.3635	39,713.44	.2866	195,456.57	.3354
11-20	2,924.05	.4261	32,160.67	.2372	68,402.85	.4017
21-40	3,753.60	.4494	118,275.94	.2781	28,533.71	.5340
Above 40	5,318.30	.4328	54,659.01	.2192	9,929.19	.5375
Unclassified	594.24	.2382	5,889.71	.2913	61,510.17	.3949
Total	15,697.39		158,461.20		402,671.11	
Average		.4173		.2763		.4155

Source: Compiled from the CADU Credit Program, 1968-70.

Table 8 CREDIT OUTSTANDING AT DUE DATE, CADU, 1967-70

[illegible]	1967/68				1968/69				1969/70			
	No. of Credit Taken	Amount of Credit [illegible]	[illegible]	Credit [illegible]	No. of Credit [illegible]	Amount of Credit [illegible]	[illegible]	Credit [illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	16	[illegible]	-	-	134	7,700	30	2,1[illegible].37	[illegible]	[illegible]	[illegible]	[illegible]
1-10	81	[illegible]	5	165.70	438	35,715	14[illegible]	11,4[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11-20	35	[illegible]	2	454.00	144	37,160	63	15,772.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21-40	2[illegible]	[illegible],765	1	4.70	60	18,275	23	[illegible],27[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Above 40	18	[illegible]	3	1,225.60	54	54,000	24	35,717.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Unclassified	17	[illegible]	[illegible]	155.24	12	5,890	11	2,45[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total	189	15,7[illegible]	17	2,015.24	863	15[illegible]	30[illegible]	72,9[illegible]	[illegible]	[illegible]	[illegible]	[illegible],931

Source: Compiled from the CADU Credit Program, 1968-70.

Table 9 PERCENTAGE DISTRIBUTION OF CREDIT OUTSTANDING AT DUE DATE AMONG DIFFERENT CLASSES OF FARMERS, CADU, 1968-70

	1967/68			1968/69			[illegible]		
Area Owned (Ha.)	% of Total Credit Takers	% of Defaulters	% of Credit Outstanding	% of Total Credit Takers	% of Defaulters	% of Credit Outstanding	% of Total Credit Takers	% of Defaulters	% of Credit Outstanding
Tenants	6.5	-	-	15.4	9.7	2.97	[illegible]	[illegible]	
1-10	42.0	29.4	8.2	50.5	47.5	15.74	[illegible]	[illegible]	[illegible]
11-20	19.6	[illegible]	22.5	16.6	22.4	[illegible]	[illegible]	[illegible]	[illegible]
21-40	11.1	[illegible]	0.2	7.6	7.5	7.24	[illegible]	[illegible]	[illegible]
Above 40	9.5	17.6	61.3	6.2	9.5	48.9[illegible]	[illegible]	[illegible]	[illegible]
Unclassified	8.9	35.[illegible]	7.7	3.7	3.5	[illegible]	[illegible]	[illegible]	[illegible]
Total	100.0	100.0	100.0	100.0	100.0	100.0	[illegible]	[illegible]	[illegible]

Source: Compiled from the CADU Credit Program, 1968-70.

48. The relative due date repayments were gradually deteriorating at CADU as the number of credit takers increased from one year to the next. For example, 4.5% of the total number of credit-takers in 1969/70 did not settle their debts at due date, compared to 3% in 1968/69 and only 8.9% in 1967/68 (Table 10). Most of the outstanding loans of 1967/68 and 1968/69 were attributed to the poor repayment records of the bigger landlords, but it is difficult to put the blame on any particular class for the outstanding loans of 1969/70.

Table 10: PATTERNS OF OUTSTANDING LOANS AT DUE DATE, CADU, 1968-70

Year	CREDIT			CREDIT-TAKERS		
	Total Credit (Eth$)	Outstanding (Eth$)	% Outstanding	Number of Credit-Takers	Number of Defaulters	% Defaulters
1967/68	15,700	2,015	12.9	189	17	8.9
1968/69	158,460	72,905	46.1	868	307	35.3
1969/70	502,875	245,931	49.1	4,769	2,143	44.9

Source: Compiled from the CADU Credit Program, 1968-70.

49. There are no indications that the decline in due date repayment rates was caused by serious crop failures or any other uncontrollable factor. Thus, unless there were less visible forces responsible, the poor repayment record may be due to inefficiencies in the debt recovery process - probably true since it was learned that only a very small percentage of the credit remained outstanding few months after the due date. For example, only 17% of the total 1968/69 loans and 7.4% of the total 1969/70 loans were outstanding about four months after due date (5, 6).

Output Marketing

50. Because Chilalo was best suited for cereals and livestock and because markets were favorable for wheat and milk, CADU concentrated its marketing activities on these two products. No organized milk markets existed in Chilalo until CADU's Marketing Division saw the possibility of supplying the major markets at Addis Ababa and Nazret. It organized collecting stations along the major road and started collecting milk from farmers every morning. The farmers are paid Eth$0.25 per liter and CADU sells it for Eth$0.35 per liter in Addis Ababa.

51. The milk marketing operation needed a minimum of 1,400 liters daily to break even, and the major buyer, the Shola Dairy Farm in Addis Ababa,

demanded a constant daily supply. Due to the tremendous seasonal variation in milk supply (Table 11), the break-even point could only be reached during peak months and a constant supply for the Addis market could not be maintained. This seasonal variation in milk supply is partly caused by pasture problems during the drier part of the year, i.e., when most of the cattle are driven to the lowlands for grazing.

52. Efforts are being made to lessen pasture problems by introducing supplementary feeding during the dry season. High-milking crossbred cattle are also being developed for distribution to farmers.

Table 11: MONTHLY MILK PURCHASE BY CADU, 1969-70

Month	Liters	No. of Suppliers	Month	Liters	No. of Suppliers
July	11,341	521	January	8,089	125
August	38,170	445	February	8,918	127
September	16,311	421	March	22,631	318
October	18,381	408	April	34,971	433
November	18,743	298	May	38,517	455
December	11,960	187	June	33,183	472

Source: Bengt Nekby, CADU, An Ethiopian Experiment in Developing Peasant Farming (Stockholm: Prisma Publishers, 1971), p. 55

53. The number of milk stations grew from only one in 1967/68 to nine by 1971/72, but the total amount of milk collected has been continuously declining since 1969/70 (Table 12). The main reason for the decline appears to be because - farmers found wheat cultivation to be more profitable than cattle raising, which caused the continuous increase in wheat hectarage (as well as other crops) at the expense of pasture lands (Table 13).

54. CADU's grain marketing activities are limited to the area's three major crops - wheat, barley and flax. In fact, the major emphasis has so far been in wheat marketing, as can be seen from Table 13. Of course barley hectarage in Chilalo is much larger than that of wheat, but returns per hectare are higher for wheat than for barley. 1/ Besides, barley has traditionally been used for home consumption, whereas wheat is mostly marketed.

1/ The cultural practices required for the production of wheat and barley, are similar, but yields per hectare using fertilizers and improved varieties within the CADU project area are higher for wheat; and wheat demands a higher price than barley under present conditions(2, 5, 17, 20, 31).

Furthermore, CADU can easily sell wheat to bid flour mills whereas most of other crops have to be sold in retail markets, which CADU has found to be too costly. This concentration of CADU's extension and marketing activities on wheat led to an expansion of the wheat area in Chilalo from 23,649 ha. in 1966 to 51,000 ha. in 1971, and of the total output from 31,450 tons in 1966 to about 102,000 tons in 1971 (Table 14).

Table 12: MILK PURCHASED BY CADU MILK COLLECTION STATIONS, 1967/68-1971/72

Year	No. of Stations	Milk Collected (liters)	Net Benefits over/a Local Market ($)
1967/68	1	4,000	600
1968/69	5	136,000	20,400
1969/70	6	318,000	47,700
1970/71	8	159,000	23,850
1971/72	9	147,113	22,066

Source: CADU Marketing Division files and cost/benefit analysis of CADU, 1967/68-1974/75.

/a Represents net price increment paid by CADU over local price.

Table 13: GRAINS PURCHASED BY CADU'S MARKETING DIVISION AND NET BENEFITS GENERATED BY MARKETING ACTIVITIES, 1967/68-1970/71 /a

	Wheat		Barley		Flax	
		Net Benefits /b		Net Benefits /b		Net Benefits /b
Year	Quintals	$	Quintals	$	Quintals	$
1967/68	480	1,440	-	-	-	-
1968/69	2,300	6,900	-	-	710	2,840
1969/70	6,314	18,942	-	-	798	3,192
1970/71	23,980	71,940	520	1,560	6,100	24,400
1971/72	93,887	281,661	12,149	36,450	3,327	13,308

Source: CADU Marketing Division annual reports.

/a During the 1971/72 season CADU also bought 1,068 quintals of peas, 904 quintals of rapeseed and 1,900 quintals of maize.

/b The net benefits resulted from the net prices CADU paid above local market prices.

Table 14. COMPARISON OF 1965 AND 1971 CROP PRODUCTION IN CHILALO /a

Crop	1965 Area (ha.)	1965 Volume (tons)	1971 Area (ha.)	1971 Volume (tons)
Barley	57,853	108,554.8	79,300	125,880
Wheat	33,649	31,457.2	51,000	102,000
Flax	18,939	11,931.6	25,300	15,939
Peas	8,957	11,733.7	5,400	8,320
Corn	4,881	14,853.3	17,700	52,985
Beans	3,908	10,690.7	7,800	21,136
Teff	1,516	1,395	7,600	9,500
Sorghum	610	-	-	-
Lentils	88	-	-	-

Source: CADU Prior Research Task No. 3 and CADU Crop Sampling Surveys.

/a Note that there has been a tremendous increase in the hectarage of all crops at the expense of pasture and fallow lands, indicating the growth of interest in crop production.

CADU's Purchasing Policy

55. Prior to the 1971/72 season, CADU was purchasing grains (mainly wheat) from farmers by paying Eth$0.50 to Eth$4 per quintal above prevailing local market prices. /1 This policy resulted in CADU incurring losses. For example, during the 1970/71 season, CADU lost Eth$68,217.44, and that prompted the Planning and Evaluation Section to look for other approaches to a more stable price structure throughout Chilalo while hopefully eliminating CADU's losses.

56. The Planning and Evaluation Section decided to forecast the average price of wheat for the 1971/72 season using a simple linear regression 2/ which forecasted price as a bench mark. The forecasted price was Eth$27.50, and after deducting CADU's selling costs of Eth$6.72 per quintal, a purchase

1/ CADU provides its marketing services to participants as well as non-participants of its credit program. For example, in 1970/71 it purchased only 10,107 quintals of grain from credit-takers compared to 19,725 quintals from non-borrowers (unpublished internal memorandum of the Marketing Division).

2/ The trend line equation was: $Y = a + bX$; Y = Price, X = Time (year).

price of Eth$20.50 per quintal was set for Asella. For other trade centers, adjustments were made by taking account of additional transfer costs. Under this policy, CADU had to sell at least 70,000 quintals at a minimum price of Eth$27.60 per quintal to break even.

57. The projected minimum price of Eth$27.00 per quintal was far from being realized as the result of some unanticipated developments.1/ Imports of 43,000 tons of wheat ordered by the Grain Corporation to meet the anticipated shortages between June and November of 1971 arrived in December just as the domestic harvest of 1971 was being placed in the market. These imports depressed wheat prices throughout the year causing considerable loss to CADU's autonomous Marketing Division.

58. For the 1972/73 season, it was decided to let farmers bear the marketing risks involved. A two-payment system was proposed, with 90% of the prevailing local market price as the first payment. However, because local traders were ready to buy all of their produce at local market prices, farmers refused to sell their grains to CADU. Two reasons forced CADU to reverse its policy and buy grains at prevailing local prices. First, farmers might start losing their confidence in CADU, particularly so since traders and other local influentials were trying to take advantage of the situation by stimulating rumors discrediting CADU's marketing activities. Second, a sudden halt in buying by CADU would have meant less competition for local traders (hence lower prices to farmers) as well as a greater possibility of a lower credit repayment rate by farmers.

59. While there is an undoubted need for marketing and pricing policies, attempts by CADU alone to solve the problem are futile. CADU handles such an insignificant portion of the marketable wheat surplus in Chilalo, let alone the nation, that setting flour prices was a risky and costly venture. 2/

60. A detailed analysis of the marketing system in Ethiopia in general and the CADU project area in particular is given in Appendix V. On the assumption that wheat is purchased in Asella at harvest time and sold in Addis Ababa just before harvest season begins, estimates were made of gross marketing and storage margins per quintal of Eth$4.20 for 1968, Eth$3.11 for 1969 and Eth$8.18 for 1970 (Table 8, Appendix V). Given that CADU's selling costs (including storage) are about Eth$6.70 per quintal compared to only about Eth$3.00 per quintal for small traders, CADU can hardly compete with local traders in spite of its extensive storage program unless it finds means of reducing its selling costs. 3/

1/ In addition, the forecasting model, with only one explanatory variable (time), seems to have been incorrectly specified.

2/ For example, of the estimated 1971 marketable wheat surplus of 17,980 tons in Chilalo, CADU handled only 2,350 tons, or 6% (CADU Marketing Division files).

3/ The relatively higher selling cost for CADU is primarily due to the large number of high salaried staff of the Marketing Division.

Local Participation

61. Measures to promote local participation are centered around the formation of cooperatives and different levels of committees that participate in the project's decision making process.

62. Development of Cooperatives: All marketing centers throughout the CADU project area are planned to gradually develop into full-fledged cooperative societies. But by the end of 1972 only one of the 32 trade centers (the Bilalo Cooperative Society) was registered. During the 1971/72 season, only 147 out of 557 farmers who took inputs on credit from the society's store were registered members. 1/

63. The main cause for the slow progress of cooperative development in CADU is probably the lack of integration of the credit, marketing and cooperative promotional activities. The Cooperative Unit was part of the Extension Division (whose major activity is demonstration of yield-increasing inputs and cultural practices) until it was transferred to the Marketing Division in February 1972. Unlike other sections of CADU, it is very poorly staffed with only one of its four present staff members having some training in cooperative principles. In fact, since early 1972 the unit has been operating without the head, whose contract terminated, and without the assistant head, who resigned.

64. Furthermore, CADU's own credit and marketing activities seem to discourage its cooperative development efforts. A farmer can get the same services from CADU's trade centers and from a cooperative even though by being a member of a cooperative he will incur more costs (at least in the short run). These costs include membership fees, contributions for building stores and costs associated with certain risks (such as unexpected price declines or defaulting members). Under such a setup a farmer is being rational in choosing to operate instead through a trade center. Currently, CADU is developing a program that would phase out all credit and marketing activities through trade centers, in favor of cooperatives after three years of full operation.

65. There were several complaints by board members of the only registered cooperative at Bilalo that major decisions regarding marketing and pricing policies are made by CADU's Marketing Division personnel without their participation. Some even complained that their cooperative has, for all practical purposes, been treated just like any other trade center. Such conflicts and misunderstandings could have negative effects on the attitudes of farmers towards developing self-confidence in running their societies, thereby jeopardizing the entire objective of promoting local participation.

1/ Under existing regulations, non-members can get their inputs from nearby cooperatives. The only difference between members and non-members is that members are charged Eth$1 per quintal less for fertilizer.

66. Development Committees: The top-level committee is a ministerial committee whose aim is to coordinate the activities of all package programs with the activities of other ministries. At a lower level is the Awraja Development Committee whose function is to coordinate the activities of CADU with other activities in the awraja. 1/ At the grass-roots level, there are farmers' committees with whom the project works to promote the adoption of innovations and promotion of cooperatives as well as participation of the target population in other decision-making processes.

67. CADU's Awraja Development Committee, 2/ which includes the awraja governor, officers of the various ministries, executive director of the project and representatives of other influential forces in the awraja, has failed to achieve its objectives mainly because the interests of the more influential and powerful members of the committee were in conflict with the stated aims of CADU. The conflict prompted CADU to look for alternative means of promoting local participation and has produced a rather complex strategy that attempts to minimize the involvement of antagonistic parties in the decision-making process.

68. CADU's new mechanism involves four committees, each with the same objectives but serving a wider area at each level. The lowest level is the Model Farmer Area Development Committee (MFADC), which has six members: the model farmer, one golmasa, 3/ three elected farmers (at least one of which should be a tenant) and the extension agent. At consecutively higher levels are the Extension Area Development Committee (EADC), the District Center Development Committee (DCDC) and the Awraja Development Committee (ADC). Their membership becomes increasingly large and broad-based the higher level the committee. The ADC has 21 members whose positions range from the awraja governor to a peasant farmer representing each extension district.

69. No government official, except the golmasa, is involved in the two lowest committee levels where promotion of most of CADU's activities is involved, and CADU hopes to use these grass-roots-level committees more effectively in transmitting the concept of collective responsibility for its development efforts. Active participation by these committees is hoped to speed up the flow of information, increase cooperation of the target population and provide feedback to project direction sothat necessary changes can be made whenever the need arises. As a first step, the model farmer area committees are screening credit applicants, with guidance from the extension agents.

1/ An "awraja" is a sub-province.

2/ The Awraja Development Committee has met only once, in January 1969.

3/ The "golmasa" institution, which is very new, is unique to Arussi Province. A golmasa is an elected trustee who acts as an arbitrator in disputes between farmers and collects statistical information for the woreda (district) government.

Staffing and Training

70. Most of CADU's high and middle-level Ethiopian staff are trained in other Ethiopian institutions. It trains its own l -level field staff and some of those needed by the MPP at its training center (Table 15). Almost all of the key professional positions and departmental headships were held by expatriates (all Swedes) at the beginning, but replacement of some of its key expatriate staff with highly qualified and able Ethiopians has progressed satisfactorily. A good indication of this progress is the decline in the number of expatriate staff from about 40 in 1968 to only 24 by the end of 1972, i.e., a decline from about 18% in 1968 to only about 3% by the end of 1972.1/

Table 15: BREAKDOWN OF FIELD STAFF TRAINED AT CADU'S TRAINING CENTER, 1969-70

Year	Assistant Extension Agents			Women's Assistant Extension Agents			Trade Center Foremen		
	CADU	MPP	Total	CADU	MPP	Total	CADU	MPP	Total
1969	12	-	12	-	-	-	-	-	-
1970	22	8	30	12	-	12	12	-	12
1971	32	32	64	22	1	23	22	23	45
1972	8	86	94	-	-	-	31	-	31
Total	74	126	200	34	1	35	65	23	88

Source: Compiled from files of the Extension and Training Division CADU.

71. Provisions have been made for all package projects under EPID to employ staff on contract basis with a three months' notice of termination. This has worked favorably for CADU in comparison with the process employed by the Central Personnel Agency (CPA), which hires all government employees. CADU's project direction acknowledges that contract employment has contributed significantly to the effectiveness of its work program, as it allows for promotions and salary increments to be strictly based on performance rather than on tenure, as is done by other government agencies.

72. In contrast to other Ethiopian Government agencies, CADU seems to have gradually gathered highly motivated Ethiopian staff whose working relations with their expatriate counterparts have progressed very smoothly. This should be attributed to the meaningful jobs that CADU provides and to the quality of leadership at all levels of the project. Besides, CADU provides in-service training for many of its staff and sends others abroad for further studies.

1/ There were about 280 positions for contract employees (only about 220 filled) in 1968 compared to 525 contract employees by the end of 1972 (34).

Other Programs

73. Water Development: CADU's water development program aims to minimize health hazards through improved rural water supply for both human and livestock consumption. The Water Development Section has already undertaken comprehensive surveys of ground and surface water sources and has come up with a master plan for water development in the project area.

74. Investigation is still going on to determine the cheapest and the safest source of rural water supply out of several possible alternatives. Once the best possible source is located, the Water Development Section plans to organize local self-help activities and to provide necessary technical assistance. Implementation and financing is up to the local communities, but the section plans to make provisions for long-term loans.

75. Rural Health: In an effort to determine the relationship between health, nutrition, population growth and rural development, CADU incorporated a rural health program in its activities from the very beginning. Its active involvement in this area, in close collaboration with the Ethiopian Nutrition Institute, stimulated the government to strengthen the provincial health services, family planning activities and nutritional and child-care programs. In fact, the provincial government's health services department took over CADU's rural health program in 1971 because it was felt that existing facilities could be utilized better. Although there are no documented indicators of the program's impact (such as changes in mortality rates and life expectancy), it is believed to be operating satisfactorily with some assistance from SIDA.

76. Feeder Roads: In order to facilitate its aim of widening the geographical coverage of its programs, CADU has recently started building feeder roads. It intends to build five stretches of feeder roads totalling 155 kms by 1975. Feasibility studies of all five stretches, which were conducted by CADU's Infrastructures Division have come up with benefit-cost ratios greater than 3. But actual cost figures are not yet available since the road-building program has just been started.

77. Since there is only one all-weather road that passes through the project area, the five feeder roads (each stretching for about 30 kms) are expected to facilitate extension work, reduce transportation costs between farms and markets and encourage more farmers to participate in the project's programs. CADU has already started building the Asella-Kersa stretch where both labor-intensive and capital-intensive techniques of road building are being tested. The major problem so far has been the seasonal supply of local labor. Road construction may have to be timed to coincide with slack seasons on the farm wherever feasible.

V. PROGRAMS AND MEANS OF DEVELOPMENT IN WADU

Development of Innovations

78. As was the case with CADU, improvements in crop and livestock production were found to be essential prerequisites to WADU's entire development program. Improvements in crop production were to be accomplished by introducing improved seed varieties, chemical fertilizers, insecticides, implements and improved cultural practices (such as date of planting, spacing, pruning and mulching).

79. Table 16 shows that yield targets planned for year 9 were surpassed by year 2, mainly due to significant response of the project-area soils to fertilizer and the high and rapid rate of response of the Wolamo farmers to the innovations. It was projected that coffee yields would increase by as much as 30% just by the introduction of improved cherry-picking procedures (selective picking of ripe cherries) and by the introduction of pruning and coffee-washing processes (59). At this stage, it is difficult to assess the impact and the rate of adoption by farmers of the coffee improvement practices developed by WADU.

Table 16: A COMPARISON OF PRE-PROJECT, YEAR 2 AND YEAR 9 (MATURITY) CROP YIELDS, WADU, IN Q/HA.

Area	Pre-Project	Maturity (Year 9)	Average Year 2
Highland:			
Maize	8.0	13.0	20.0
Wheat	9.0	12.0	17.0
Teff	5.5	8.5	7.0
Settlement:			
Maize	12.0	18.0	24.0
Cotton	1.4	5.6	10.0
Chilies	1.0	5.0	9.0

Source: WADU Annual Report, 1971/72.

80. The livestock development program was planned along three lines. The first program was designed to provide effective veterinary services in order to control livestock diseases and parasites; the second program was to deal with destockings in the highlands to minimize the problem of overgrazing; and the third program was to deal with upgrading local dairy cows by providing artificial insemination services. In the first program, the veterinary section has actively participated in a vaccination campaign that covered the whole of Wolamo Awraja, where some 305,000 head of cattle (80%

of the cattle in Wolamo) were vaccinated against three major diseases 1/ Nothing has so far been accomplished in the destocking program, even though the plan was to reduce the number of animals in the highlands by about 7,000 by the end of Phase I and at an annual rate of about 5,300 head after that. The dairy program is expected to make some 200 crossbred heifers available to farmers by the end of Phase I, compared to 540 as originally planned. Some 35 Freisian bulls are also expected to be distributed throughout different development centers to provide breeding services.

Extension Activities

81. WADU's extension program was designed to cover four "project areas" (two in the highlands and two settlement areas). Each of the highland project areas is sub-divided into "development areas." There were 11 development areas in the highlands by October 1977. Extension services in each of the four project areas are supervised by a "senior agent" 2/ who is assisted by "field agents" 3/ (one field agent for two development areas) and "demonstrators" (six demonstrators per development area). 4/ In each of the settlement areas there are three field agents and ten demonstrators under the supervision of one senior agent.

82. WADU's extension strategy relies on demonstrating new inputs and new cultural practices on the plots of farmers who are usually selected by the extension agents on the basis of their interest in the innovations and their position as leaders (or influentials) in their neighborhood. Different farmers' plots are usually used to demonstrate different innovations. WADU does not favor CADU's concept of the "model farmer" as a major tool for demonstrating new techniques because only a few farmers get all of the benefit from the actual demonstration process on their farms and because there is a danger that the whole concept could be interpreted by non-model farmers as giving preferential treatment to a selected few.

83. As can be seen from Table 17, the targets set for Phase I, i.e., the number of farmers anticipated to be reached by the extension program, has been surpassed in the highlands. The primary reason seems to be the unanticipated higher rate of adoption of innovations by the Wolamo farmers, which is attributable to an efficient extension strategy by WADU. On the other hand, the planned target of 1,750 farmers in the settlements will not be reached by

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1/ Vaccinations were against rinderpest, contagious pleuro-pneumonia and blackleg (59).

2/ A "senior agent" is a graduate of the Jimma Agricultural School with many years of field experience.

3/ A "field agent" is usually a recent graduate of the Jimma Agricultural School. But experienced "demonstrators" can become field agents.

4/ A "demonstrator" is a 9th to 11th-grade finisher who has been given field training on extension practices.

the end of Phase I, not because the extension program is failing but because the settlement program is lagging behind set targets, as weill be discussed in more detail in the section on settlement schemes.

Table 17: PLANNED AND ACTUAL FARMER COVERAGE BY THE HIGHLAND EXTENSION PROGRAM, WADU, 1970/71-1973/74

No. of Farmers to Be Reached	1970/71	1971/72	1972/73	1973/74
Planned	-	2,000	4,000	6,000
Actual	3,317	6,521	7,070	10,000 /a

Source WADU annual reports and WADU's Development Division files.

/a Projection.

84. The number of farmers reached by the extension program is assumed to be identical with the number of farmers participating in the credit program - a rather conservative assumption. However, since all categories of farmers within the WADU project area are eligible for credit, it is assumed that farmers would very likely take inputs on credit if they have been reached at all by the extension service.

85. Table 18 gives a comparison between the planned and actual farmer/staff ratios, both in the highlands and in the settlements, by the end of 1972. Four thousand farmers were planned to be reached by the extension service in the highlands, compared to the actual number of about 7,000; only about 670 settlers were actually reached compared to the originally planned 1,200. In general, there were more farmers per staff for all staff categories in the highlands than originally planned, due to the unanticipated larger rate of farmer participation. As a result of the unanticipated lag in the settlement program, there were fewer farmers per staff for all staff categories than planned in the settlement areas.

Land Planning

86. WADU had planned to survey and map about 10,000 ha. in both the highlands and the settlement areas and to encourage reorganization and consolidation of existing holdings in the highlands where fragmentation is widespread (45). By the end of 1972, aerial surveys and maps of 15,000 ha. in the highlands and 55,000 ha. in the settlements were prepared with some technical assistance from the UK. A photo-mosaic of the entire awraja has also been prepared.

Table 18: FARMER/EXTENSION STAFF RATIO IN WADU BY THE END OF 1972 /a

Staff Category	Highlands				Settlements			
	No. of Staff		Farmer/Staff Ratio		No. of Staff		Farmer/Staff Ratio	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Extension officer	1	2	4,000	3,000	1	1	1,200	670
Senior agent	3	5	1,300	2,300	2	2	600	335
Field agent	24	8	160	875	6	5	200	135
Demonstrator	144	95	28	120	20	55	60	13

Source: WADU annual reports and WADU Development Division files.

/a Field staff for the Home Economics Section, Livestock Section, Trials Section and Marketing, Credit and Cooperatives Section are included.

87. Nothing has been accomplished in the reorganization and consolidation of fragmented holdings in the highlands because the farmer-education program on the benefits of consolidating fragmented parcels was ineffective. The complexity of the land-tenure system and lack of a land reform officer, who could properly organize and supervise the activities, are believed to be the major causes of the ineffectiveness of the program.

Soil Conservation in the Highlands

88. Continuous cultivation, removal of vegetation, overgrazing and flooding have resulted in serious erosion problems in Wolamo. As a result, WADU planned to undertake a soil conservation campaign as one of its major activities there. By the end of 1972, about 130 kms of contour terraces had been completed, mostly using voluntary local labor. This terracing is believed to provide erosion protection for some 700 ha. of land (59).

Feeder Roads

89. A total of 375 kms (190 kms in the highlands and 185 kms in the settlements) of unsurfaced, four-meter-wide minor roads and three-meter-wide farm tracks were planned to be built by the end of Phase I (45). Records on length and type of roads built and costs are poorly kept and unreliable, probably because the road-building program has been charged to different

departments at different times. 1/ In any case, information from the Works and Services Division shows that about 83 kms of minor roads and tracks had been completed in the highlands by the end of 1972. Of these, 40 kms involved only maintenance work on existing tracks. In the settlements, 16 kms of minor roads and 80 kms of farm tracks have been completed. The construction costs have been estimated at Eth$1,570 per km for minor roads and Eth$5 per km for farm tracks. Costs for maintaining existing tracks were estimated at Eth$70 per km (59). No figures are available for annual maintenance costs.

Water Supply

90. Improvement of water supply throughout the project area was one of the major programs of WADU in its original proposal (45). Self-help programs were to be organized to improve water supply in the highlands as well as in the settlements, and means were to be developed to provide water to project headquarters.

91. By October 1972, a pipe-water supply from a bore-hole had been installed in the project headquarters; maintenance work had been done on existing pipelines in the settlement scheme at Abella; and in a few selected highland areas, protection of about 20 springs had been completed (59). Nevertheless, the water development program as a whole has been progressing at a slower pace than expected. No comprehensive surveys have been conducted to determine the cheapest sources, and no provisions have been worked out to make the self-help program effective (such as long-term loans).

Farm Credit

92. Forms of Loans and Source of Funds: WADU gives both cash loans and loans in kind. Short-term loans are given in the form of farm inputs (fertilizer, seeds, insecticides, etc.) at 12% interest per annum. The proposed medium-term loans at 8% interest in the form of farm implements and dairy cows are not yet offered. Thus, all of WADU loans by the end of 1972 have been short-term.

93. There are two major changes in the credit program. The proposed cash loans for hiring labor in the settlements have been abolished primarily because the loans were being used for other purposes (mostly consumption), and cash advances have been introduced to save farmers from borrowing at exhorbitant interest rates from local moneylenders during holiday celebrations.

94. Funds for the credit program (in the form of inputs) are made available by the AID Bank on a yearly basis at 10% interest per annum (the extra 2% being charges to farmers is intended to cover supervision costs and risks).

1/ An engineer in the Development Division (Figure 7, Appendix VII was responsible for road building before Land Planning Section took over. Currently, the Works and Services Division is in charge of building roads.

95. Eligibility for Credit: All categories of farmers -- owner-cultivators as well as tenants and small-scale farmers as well as large-scale farmers -- are eligible for credit as long as they are fulltime farmers and operate within the prescribed project area. Such a policy is justified on the basis that land holdings in Wolamo are very small, with a median holding of only 0.5 ha. The World Bank's Appraisal Mission Report states that only 4% of the landlords own 60% of the land in Wolamo (45), but one rarely finds farmers cultivating over 2 ha. participating in the credit program in spite of the fact that no restrictions are imposed.

96. Security Requirements: WADU's security requirements are rather liberal. No maximum or minimum limit is imposed, and above all, no down-payment is required. The main security measures are that each borrower has to provide two guarantors acceptable to the screening committee and that farmers within a given extension area have to be mutually responsible for the total loan in their area. No individual farmer is eligible for more credit until he has settled all previous loans, and no farmers from a given extension are eligible for future credit if the repayment rate of the entire area two months after the final due date is less than 90%.

97. Screening of Credit Applicants: Credit applications are processed by a nine-member "Development Area Committee" (DAC) with some technical advice from the extension staff. The committee is elected by all farmers within a given "development area." The following general steps are followed in processing credit applications:

(a) Farmers fill out application forms with the help of demonstrators.

(b) Applications are submitted to the DAC for screening, and the DAC makes the final decision as to who is eligible for credit.

(c) Bulk order dispatches are sent to the Marketing, Credit and Cooperatives Division together with the approved applications, which serve both as promissory notes and loan agreements.

98. Disbursement of Inputs: Disbursements are made through the "Group Marketing Centers." Each center has an 800-ton capacity warehouse. In October 1972 there were 13 group marketing centers, 11 in the highlands and one each in the settlement areas, although the original plan envisaged only five simple markets to be established by the end of Phase I. Development of marketing centers is closely related to success in the extension program. The rapid increase in the number of group marketing centers is due to the extensive area coverage by the extension service during the first two years.

Performance of the Credit Program

99. Number and Amount of Loans: Table 19 gives a yearly breakdown of the number, amount and average amount of loans. Both the number and

amount of loans have been continuously increasing although the rate of increase is much higher for the 1970/71 season. Part of the explanation for such a high rate of increase is that WADU was not in full operation during its first season.

Table 19: NUMBER AND AMOUNT OF LOANS, WADU, 1969/70-1972/73

Crop Year	No. of Loans		Amount of Loans		Average Loan		Quintals of Inputs	
	No.	% Increase	Eth$	% Increase	Eth$	% Increase	Seed	Fertilizer
1969/70	727	-	23,035	-	32	-	-	-
1970/71	3,923	439.6	80,169	233,6	20	(-39.4)	117	144
1971/72	4,791	22.2	159,339	98.8	33	65.0	357	1,420
1972/73	7,040	47.2	303,960	90.8	43	28.3	-	-

Source: WADU annual reports and WADU's MCC Division files.

100. There is no clear explanation of why the average loan declined during the 1970/71 season, but the increases in subsequent years are primarily due to the cash advances that were made starting in 1971/72.

101. Distribution of Credit among Different Classes of Farmers: Given that 65% of all farmers in Wolamo own some land, half of whom rent still more land because their holdings are too small (45), only about 30% could be classified as pure owner-cultivators, with the rest being tenants and tenant-owners. Assuming that this tenancy classification represents the actual situation in the WADU project area, Table 20 shows that there has been a disproportionately greater rate of participation by owner-cultivators in the credit program, and consequently a disproportionately larger share of the inputs went to owner-cultivators. For example, landowners made up 83% and 71% of all credit-takers and accounted for almost 83% and 72% of the inputs distributed on credit during 1970/71 and 1971/72, respectively. Tenants, on the other hand, constituted only 11% of the credit-takers and took about 12% of the inputs even though they are estimated to be 35% of the farming population (45).

102. What is not easily explainable from the above analysis of WADU's credit program is why participation is disproportionately lower for tenants when the requirements for credit eligibility are the same for tenants as for landowners. First, tenants may find it harder to secure guarantors acceptable to the screening committee due to their socio-economic status, which is highly dependent on whether they own land or not. Second, tenants may find their rewards from adopting new technologies are not commensurate with their efforts since, under existing share-cropping arrangements, they pay one-third or one-half of their gross benefits to their landlords, who contribute nothing to the variable costs (their only contribution to the production process being

the land, not even improvements on the land). Third, the insecurity of tenants' expectations -- due to insecure landholdings, non-written leases, short-term leases or lack of provisions for sharing production costs with their landlords -- may explain reluctance to make investments by participating in the credit program.

103. A further classification of credit-takers on the basis of area cultivated indicates that cultivators of less than one hectare made up about 82% and 70% of all credit-takers and took 60% and 42% of the inputs during the 1970/71 and 1971/72 seasons, respectively (Table 20). Given that the median holding in Wolamo is only 0.5 ha., with 87% of the holdings less than the average holding of 1.5 ha. (45), the high level of participation of small-scale cultivators should not be surprising. Their share of the inputs seems to be small compared to their participation rate, but it is due to the relationship between the amount of inputs needed and the size of area cultivated.

104. Credit Repayment Performance: Information on the repayment performance of different classes of farmers, classified by tenancy or area cultivated, is not available for WADU. However, discussions and interviews with several staff members from WADU's Marketing Credit and Cooperatives Division have indicated that small cultivators and tenants have better records of timely repayments. In general, however, WADU's repayment has been excellent. Repayment rates for 1970/71 and 1971/72 are reported as 98% and 95%, respectively (59).

105. Although WADU does not have a specific due date for credit repayments and only requires that loans be repaid within one year after they have been made, its reported repayment rates are very high by any standard. Furthermore, WADU's achievement of such a high repayment rate without requiring any down payment and with more than 25% of its total loans given for consumption purposes seems to indicate that down payment requirements do not necessarily ensure higher repayment rates although they exclude the poorest segment of the farming population from taking advantage of the credit program.

Output Marketing

106. WADU's Marketing, Credit and Cooperatives Division undertakes all activities related to credit, marketing and cooperative development through the existing 13 group marketing centers, whose organizational structure resembles cooperative societies while allowing WADU to retain complete control. The idea is to develop the marketing centers into viable institutions able to provide credit, marketing and storage facilities to small farmers by the time the centers are ready to be registered as full-fledged cooperative societies. 1/

1/ WADU's achievements in cooperative development are discussed below in the section on local participation.

Table 20. DISTRIBUTION OF INPUTS ON CREDIT AMONG DIFFERENT CLASSES OF FARMERS IN THE HIGHLANDS OF WADU, 1970/71-1971/72

Area Cultivated (ha.)	1970/71						1971/72					
	Credit-Takers		Seed		Fertilizers		Credit-Takers		Seed		Fertilizers	
	No.	%	Q	%	Q	%	No.	%	Q	%	Q	%
Tenants												
0.0 - 0.99	162	9.15	19.62	5.88	69.03	5.79	290	9.34	18.21	4.72	163.73	5.52
1.0 - 1.99	33	1.86	10.39	3.12	39.39	3.30	78	2.51	13.42	3.46	123.62	4.16
2 and above	4	0.23	10.20	3.06	19.75	1.65	9	0.29	19.20	4.96	27.75	0.93
Sub-total	199	11.24	40.21	12.06	128.17	10.74	377	12.14	50.83	13.14	315.10	10.61
Tenant-Owners												
0.0 - 0.99	89	5.02	15.09	4.53	38.02	3.10	216	8.41	27.37	7.07	157.64	5.31
1.0 - 1.99	21	1.19	15.20	4.57	30.26	2.54	52	1.68	14.53	3.57	89.53	3.02
2 and above	2	0.12	2.60	0.78	6.50	0.54	1	0.03	0.60	0.15	4.50	0.16
Sub-total	112	6.33	32.89	9.88	74.78	6.27	269	10.12	42.50	10.97	251.67	8.49
Owners												
0.0 - 0.99	1,119	67.25	161.27	48.58	629.45	52.83	1,293	48.09	128.89	33.32	906.02	30.51
1.0 - 1.99	241	13.60	78.29	23.49	290.07	29.34	503	19.42	110.38	28.52	951.75	32.04
2 and above	28	1.58	19.97	5.99	68.80	5.77	100	3.22	33.57	8.67	327.81	11.04
Sub-total	1,460	82.43	260.13	78.06	988.32	87.94	2,196	70.73	272.84	70.51	2,185.58	73.59
Unclassified /a												
0.0 - 0.99	-	-	-	-	-	-	118	3.80	3.76	0.97	72.38	2.43
1.0 - 1.99	-	-	-	-	-	-	88	2.51	12.76	3.29	99.09	3.33
2 and above	-	-	-	-	-	-	12	0.38	4.34	1.12	46.30	1.55
Sub-total	-	-	-	-	-	-	218	6.69	20.86	5.38	217.76	7.31
Total	1,771	100.0	333.32	100.0	1,191.27	100.0	3,105	100.0	387.03	100.0	2,970.11	100.0

Source: Compiled from WADU's Planning and Evaluation Unit files

/a Tenurial classification unknown.

107. Like CADU, WADU handles an insignificant proportion of the products marketed in Wolamo. Table 21, which shows the quantities of products handled by WADU's MCC Division during the1971/72 season, gives an indication of how small the impact of WADU is on the marketing system in Wolamo. 1/ Since Wolamo is a net importer of grains (teff, barley, wheat and maize), the MCC Division prefers not to buy these products. Farmers are able to get the best available prices in their local markets. However, they have continually been pressuring WADU to buy their grains, believing that it is able to offer them a higher price than the local traders. WADU stands to lose if it buys grains because its handling costs are much higher than those of the local traders. Nevertheless, it has decided to buy some grains in order to preserve its good relationship with the farmers.

Table 21: PRODUCTS HANDLED BY THE MCC DIVISION, WADU, DURING THE 1971/72 SEASON

Product	Purchases /a			Sales			Stocks
	Tons	Eth$/Ton	Value(Eth$)	Tons	Eth$/Ton	Value(Eth$)	Tons
Coffee cherries	215.5	198.5	42,776.8	215.5	264.34	56,965.6	-
Cotton	146.1	730.0	106,653.0	146.1	746.30	109,028.1	-
Ginger	579.8 /b	146.0	84,650.8	-	-	-	131.5 /c
Maize	134.8	120.0	16,176.0	100.2	255.78	25,629.8	34.6
Chilies	29.4	500.0	14,700.0	29.4	680.45	20,005.1	-
Teff	252.3	190.0	47,937.0	17.6	355.45	6,256.0	234.7
Wheat	479.0	200.0	95,800.0	13.4	362.40	4,851.4	465.6
Hides and Skins	9.6	832.0	7,987.2	9.6	933.82	8,964.7	-
Tobacco	19.5	42.2	822.9	19.5	60.28	1,175.5	-
Total	1866.0		417,503.7	551.3		232,876.2	866.4

Source: WADU Annual Report, 1971/72, and MCC Division files.

/a First payment.

/b Net weight.

/c Dry weight.

1/ The reliability of some of the information given on the table is questionable. Sale price of wheat, teff and maize seems to be too high.

WADU's Marketing Policy

108. WADU's main marketing strategy is to let farmers participate in any risk involving unexpected price declines. Its present policy is to pay farmers 60% of the anticipated sale price of any product as a first payment, and when the product is sold to make a second payment after deducting an amount equal to 20% of the first payment to cover the marketing costs. Second payment is made only if the realized sale price more than covers the first payment plus the marketing costs.

109. The main obstacle to this policy seems to be WADU's inability to forecast product prices well enough to ensure second payments. For example, WADU was unable to make second payments for ginger, wheat, teff and maize for the 1971/72 season because much of what it bought is still in stock (Table 21). Failure in making second payments generates mistrust among farmers (interviews with some farmers have indicated this) because WADU's first payments, particularly those for grains, are usually smaller than what local merchants pay.

110. Furthermore, its higher handling costs raise serious questions as to how the MCC Division will be able to function as a viable autonomous unit in the future. Starting in the 1973/74 season, the MCC Division is expected to cover all of its marketing costs from the deductions made before giving second payments. So far, salaries of the MCC Division staff and few other costs such as depreciation of equipment have not been charged to farmers as marketing costs.

Local Participation

111. WADU's plan is to promote local participation primarily by establishing cooperative societies. As a first step toward this goal, it has organized the group marketing centers into the "WADU Group Marketing Organization" (WGMO). The scheme is to register a few of the best prepared and promising group marketing centers as primary cooperative societies and the WGMO as the "Wolamo Cooperative Union." The Wolamo Cooperative Union would then provide services to the registered primary cooperative societies as well as to the unregistered group marketing centers. WADU's involvement would terminate when all group marketing centers have registered as full-fledged cooperative societies.

112. So far only the marketing center at the Abella settlement scheme has been registered as a primary cooperative society even though the original project plan stipulated that by the end of Phase I all credit and marketing activities would be undertaken by cooperatives operating on their own (45). Nevertheless, the start seems promising. Screening of credit applicants in all development areas (or group marketing centers) is now done by an elected committee of nine member-farmers. Furthermore, each center is represented by two elected members in the WGMO Committee, which includes the project director and all senior staff of the MCC Division.

As members of this committee the farmers' representatives participate in deciding what products the WGMO should handle, what the level of first payment should be and in advising their area farmers on all operational aspects of the WGMO.

113. The encouraging signs are that most of the committees have been functioning reasonably well, and committee members have gradually become more articulate in stating their opinions and airing their grievances (61). However, some farmers really consider their group marketing organization to be just another government institution, as indicated by the lack of loyalty shown to their organization in not selling all of their produce to their group marketing center, as required (61). It cannot be clearly stated to what extent WADU is regarded as a farmers' own organization and to what extent they consider it to be an alien institution.

114. It was pointed out above that WADU was established primarily through the individual efforts of the development-minded former governor of Wolamo, who rallied his entire administration behind WADU and provided genuine support to the entire development effort. But since his departure from Wolamo (he was promoted to a higher post), participation of the awraja administration in WADU's activities has been continually deteriorating. For example, the "WADU Awraja Development Committee," which includes representatives of the awraja government, various ministries, local influentials and WADU staff, rarely meets to discuss issues that are crucial to the entire development effort. It can be hypothesized that a major cause for the deteriorating cooperation between WADU and the local administration is the big gap between the salary scales of the two organizations. Local government officials are exasperated with the fact that WADU's Ethiopian high-level staff earn two to three times as much as they do in addition to various fringe benefits (housing, transportation services, etc.).

Staffing and Training

115. WADU has had considerable difficulty in hiring high-level staff (both expatriate and Ethiopian) and in retaining degree-level Ethiopian staff. Of the nine expatriate staff posts, only four were filled at the commencement of the project (59). Of the remaining five expatriates, two arrived a year later, two more 22 months later and the last two years later. So far none of the expatriate staff posts have been taken over by Ethiopians. In fact, two expatriate staff positions, those of Project Director and Chief of Trials Division, were vacant when this evaluation was conducted in October 1972.

116. The gradual Ethiopianization of project staff is further hampered, not only by the difficulty in hiring degree-level Ethiopians, but most of all by the project's inability to retain those already hired. By the end of 1972, 12 degree-level Ethiopian staff (including the Deputy Project Director) had left WADU. Various reasons are given for such a high turnover. Project direction believes the major causes to be: remoteness of the area and ability of many of the degree-level staff to find more attractive positions elsewhere with prospects for further training and long-

term careers. This argument may have some validity since WADU does not provide any training program for its high-level staff. But interviews with various Ethiopian degree-level staff indicated that WADU has unfair recruitment procedures (different fringe benefits promised for the same level staff), unbalanced salary structures (different beginning salaries offered for staff with similar qualifications), incompetence in some of the senior staff (both Ethiopians and expatriates), lack of disciplined working conditions and deliberate exclusion of some staff when making certain important decisions.

117. WADU's training program is limited to demonstrators and a few selected farmers. In the past, demonstrators (who are 8th to 11th-grade finishers) were given only field training by the extension agents. Very recently, however, WADU started offering them one month of theoretical training at its Training Center. Selected farmers are periodically brought to the WADU Training Center for a period of one week or less to be trained on certain specific cultural practices such as method and rate of fertilizer application, advantages of raw planting and value of pesticides.

The Settlement Program

118. Historical Background of the Settlement Schemes: Through the individual initiative of the Awraja Governor and some technical assistance from Israel, the first 28 families were settled at Abella in 1959 (22). That settlement program never flourished because the governor left Wolamo in 1960 and died the same year. Another governor rejuvenated the Abella settlement scheme in 1966 and started a new one at Bele in 1967. Just before WADU came into operation, he had settled 110 families at Bele and increased the number of settlers in Abella to 590 (62).

119. Because both settlement schemes were poorly planned, WADU decided to consolidate and reorganize the old plots before preparing plots for new settlers.1/ No new settler was brought to Abella until year 3 and to Bele until year 4. The 700 old settlers were to be reorganized before settling 500 new families in year 3 and 550 in year 4 (45).

120. IDA and the Ethiopian Government (the two major financers) agreed that new settlers will be selected by a sub-committee of the Wolamo Awraja Development Committee.2/ Settlers were to be drawn from the WADU project area in the highlands of Sodda and Bolosso (60%); other parts of Wolamo Awraja (15%); and other parts of Ethiopia (25%). Settlers have to be between 16 and 45 years of age and physically fit. They are required to live on their holdings and to give up all claims to other lands. They are also required to pay a development tax of Eth$58 per year for 20 years, to repay loans and to pledge the titles of their lands as security so long as there are any outstanding debts.

1/ The plots were too small and the field layout did not allow for erosion control.

2/ See section on local participation.

121. The terms of the title include provisions prohibiting subdivision and requiring settlers to follow a cropping pattern approved by the project. The Ethiopian Government has so far refused to give conditional freehold title to settlers, as was agreed upon in the original project proposal. A long-term lease, which was acceptable to IDA and the Ministry of Agriculture, was suggested as the next best alternative. But settlers have not been issued licenses to cultivate and no long-term lease agreement had been worked out by the end of 1972.

122. Settlement Planning and Development: Approximately 10,000 ha. in Abella and 5,000 ha. in Bele were available on which 1,750 settlers (700 of whom were already there) were to be accommodated on 5-ha. plots each (45). Surveying and detailed mapping of the settlement areas were to be done with technical assistance from the U.K. Plots were to be laid out in such a way that erosion was minimized.

123. By October 1972 about 55,000 ha. were surveyed and mapped. The surveys showed four different soil conditions, necessitating four kinds of plot layouts. In the flat fertile plains, the already existing settlement plots were found to be laid out in properly surveyed and measured rectangles giving exactly 5 ha. Thus, most of the plots in these areas were found to be satisfactory, and few basic changes were needed in the layout. However, some drainage parks had to be constructed throughout the area in order to control floods coming from the high plateaus.

124. In the flat gray-soil area, few plots had been originally surveyed and measured, the remainder allocated by guess. This area was found to suffer from seasonal flooding and had to be completely reorganized and laid out for flood and drainage control. The sloping red soil area, which had been laid out in surveyed rectangular blocks, had to be completely replanned because of erosion hazards.

125. The fourth soil category was found in the flat area where large numbers of later settlers were living on small 2- or 3-ha. unsurveyed plots. There was the additional complication of patronage grants within the settlement area. It is hoped that the patronage grants will be revoked and all of this area will be laid out again after the 1972/73 crop season.

126. WADU's policy is to clear and stamp 2 ha. on each settlement plot to be ready for planting as soon as the settler moves in. It was originally planned to use a chain-clearing method that uses bulldozers and ten-ton chains. But experience in the Sudan showed that chain clearing would be inefficient and not suitable for peasant ox-drawn cultivation in the type of vegetation prevalent in the WADU settlement areas. There was besides a very large supply of underutilized cheap labor available from the neighboring highlands that could do the job satisfactorily, at a much lower cost and at the same time be provided additional income.

127. In its efforts to minimize settlement costs and maximize accessibility, the settlement planning section developed three different

kinds of unsurfaced minor roads. There are major feeder roads linking the settlement to an all-weather road and market centers. Second, there are secondary feeder roads serving a large block of plots. Third, there are individual access tracks to the different plots. The feeder roads are estimated to cost Eth$1,500 per km and the track Eth$100 per km (62).

128. WADU's documents on the settlement program are unreliable because the accuracy of certain figures could not be confirmed. Nevertheless, information provided by the Development Division shows that by October 1972 about 460 old settlements had been reorganized and about 207 new settlers accommodated (62).

129. Problems in Reorganizing Old Plots: The presence of old settlers has in some ways been more of a hindrance than a help to the orderly organization of plots under the WADU settlement program. Because many of the old settlers were used to grazing a large surplus of livestock on the unoccupied areas surrounding their settlements, they were opposed to WADU's idea of planned layout of settlement plots which implied reduced number of livestock and less grazing area per settler. Those who had only 2-ha. plots were not attracted by the 5-ha. plots that were properly laid out because they did not want to move away from their communities. 1/ WADU thinks, however, that most of the settlers are gradually accepting the advantages of planned layouts (62).

130. Another major problem whose effects are not yet clear is that relatives of settlers have started moving into the settlement areas, with a possible danger of fragmentation of plots. Even if a plot is not fragmented, it may not be able to support a large family of relatives since an average plot is designed to support a farm family of a maximum of five persons only

131. Settlement Costs: Unfortunately, all cost figures in WADU are so aggregated that it is not possible to present a detailed breakdown of cost outlays. As a result, cost figures presented in Table 22 are the best available disaggregated estimates in spite of their questionable reliability.

132. The total Phase I cost for the entire settlement program is estimated at Eth$5,925,000, or Eth$3,386 per settler (US$1 = Eth$2.30) 2/ Of the non-contingency costs, 42% is expected to be recovered through a development tax on settlement farms over a 20-year period, and 52% is non-recoverable. Each plot costs about Eth$770 before a settler is moved in (Table 23).

1/ Most of the old settlers came from the same villages. Thus, their social and cultural life was not disrupted by their migration to the new areas.

2/ Cost estimates were based on the assumption that Phase I will cover a one-year period instead of a four-and-one-half-year period. But the costs planned for six years are expected to be incurred in four-and-

133. Most of the costs are capital costs necessarily incurred at the beginning of the project. Cost per settler is expected to decline for future phases of WADU for two reasons. First, the number of settlers is expected to increase, leading to lower fixed costs (or capital costs) per settler. Second, in the future fewer capital costs per farmer are expected to be incurred. For example, a rough estimate of the settlement costs for 4,250 settlers (Table 24) indicates that cost per settler could decline to about Eth$2,600 (of which Eth$1,320 is recoverable over a 20-year period).

Table 22: ESTIMATED COSTS OF SETTLING 1,750 FARMERS OVER A SIX-YEAR PERIOD

Cost Item	Cost (Eth$)	% of Total Cost	Cost per Settler
Non-recoverable costs			
Headquarters and administration	1,112,000	19	635
Extension and settlement	700,000	12	400
Training and trials	375,000	6	214
Marketing and crops	600,000	10	343
Aerial photos and mapping	175,000	3	100
Settlers' food	125,000	2	72
Sub-total	3,087,000	52	1,764
Recoverable costs			
Conservation, roads and clearing	1,687,000	28	964
Farm credit inputs	612,000	10	350
Sub-total	2,299,000	38	1,314
Contingencies	539,000	9	308
Grand Total	5,925,000	99	3,386

Source: WADU Project Direction files.

134. Although WADU's settlement program seems to be cheaper compared to other planned settlement schemes in Ethiopia, it is still too expensive

to be replicated on a larger scale. 1/ It is therefore imperative that WADU should concentrate on finding means of lowering settlement costs in its future efforts, if it is to meet its obligation as a pilot project to improve the government's ability to formulate and design settlement programs that can meaningfully increase agricultural employment.

Table 23: BREAKDOWN OF COSTS FOR PREPARING ONE SETTLEMENT PLOT

Cost Item	Cost per Plot (Eth$)
Minor roads and tracks	115
Mechanical clearing	165
Soil conservation	230
Cultivation	104
Water development	155
Total	769

Source: WADU Development Division files.

1/ Settlement on irrigated lands has been carried out by the Ministry of National Community Development and Social Affairs (MNCDSA) and the Awash Valley Authority (AVA). The AVA's efforts to settle the nomadic tribe of the Afars is believed to have cost about Eth$16,250 per settler on a 2.5-ha. holding, and MNCDSA's veteran settlement scheme is believed to be expensive though not as high as AVA's (52).

Table 24: ESTIMATED COSTS OF SETTLING 4,250 FARM FAMILIES (GROWING MAIZE AND COTTON) OVER A SIX-YEAR PERIOD

Cost Item	Cost (Eth$)	% of Total Cost	Cost per Settler
Non-recoverable costs			
Headquarters and administration	1,112,000	10	262
Extension and settlement	1,487,000	14	350
Training and trials	475,000	4	111
Marketing and crops	800,000	7	188
Aerial photos and mapping	250,000	2	59
Settler's food	306,000	3	72
Sub-total	4,425,000	40	1,042
Recoverable costs			
Conservation, roads and clearing	4,097,000	37	964
Farm credit inputs	1,488,000	14	350
Sub-total	5,585,000	51	1,314
Contingencies	1,001,000	9	235
Grand Total	11,013,000	100	2,591

Source: WAIU Project Direction files.

VI. PROGRAMS AND MEANS OF DEVELOPMENT IN THE MPP

Development of Innovations

135. The MPP does not have any extensive innovation development program since its main duty is to spread new technologies developed by the comprehensive projects (CADU, WADU, etc.). During its first two years it undertook country-wide fertilizer and variety trials, in which different seed varieties developed at CADU, at the Institute of Agricultural Research in Ethiopia and in other countries, were tested under varying soil and climatic conditions with different rates of fertilizer application. A two-year national average of the results of the trials on the major crops is given in Table 25.

Table 25: RESULTS OF NATIONAL FERTILIZER AND VARIETY TRIALS OF THE MAJOR CROPS, EPID, 1970-72 /a

	Production (q/ha.)				
	Wheat	Barley	Teff	Maize	Sorghum
Local variety, unfertilized	9.0	11.0	7.0	11.0	14.0
Local variety, fertilized	13.8	16.0	11.8	26.0	22.0
Improved variety, fertilized	16.8	19.2	14.8	36.0	-
Improved variety, fertilized and harrowed	19.6	-	-	-	26.8

Source: Compiled from EPID Publication No. 5, "Fertilizer and Variety Trials and Demonstrations in Ethiopia," 1970-72

/a Several varieties of each group were tried, but only the best varieties are assumed here.

136. The MPP has plans to undertake trials on various cultural practices in the near future. As it gradually becomes more comprehensive, it plans to organize its own livestock development program.

Extension Activities

137. The basic unit for all activities of the MPP is the Minimum Package area, which contains about 10,000 farm-families, extending for

5 kms on either side of a 75-km stretch of an all-weather road. Each MP area is divided into five "extension areas," each with a marketing center and a 1-ha. trial and demonstration plot.

138. Three phases are involved in the development of an MP area. After a preliminary survey, an area is selected along an all-weather road for conducting fertilizer and variety trials. It remains as an "observation area" for a year or two; if promising, it becomes a "demonstration area" for another year, where inputs are distributed to selected farmers. If within the demonstration year other farmers have shown sufficient interest, it becomes a full-fledged MP area.

139. Following CADU's strategy, the MPP concentrates its extension activities on model farmers. As can be seen from Table 26, the number of model farmers is planned to gradually build up to a maximum of 100 per MP area. Each MP area is headed by an extension supervisor, who usually is a graduate of the College of Agriculture at Alemaya. The number of extension agents 1/ and assistant extension agents 2/ is planned to build up to five each per MP area by year 5.

140. Extension services during the first two years of the MPP mainly involved demonstrating the value of fertilized and high-yielding seed varieties. The usual demonstration procedure is to hold field days on the model farms and the demonstration plots. It is difficult to say how many farmers have been reached by the extension program in the first two years. The participation rate in each MP area is expected to increase gradually until a maximum of 75% is reached by the 10th year (40). If EPID's assumption of the participation rate is accepted, a total of 3,500 farmers must have been reached in the nine MP areas and nine demonstration areas during year 1; and a total of 12,700 in 18 MP areas and 12 demonstration areas during year 2 (estimation based on Table 26). The Minimum Package Appraisal Report gives an estimation of 4,700 farmers for year 1 and 13,600 for year 2 (44).

141. A national spread of the extension activities under the MPP is indicated on Table 27. During the first two years, most of the activities have been concentrated around Addis Ababa. But with the number of

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1/ An extension agent is a graduate from the agricultural schools of either Jimma or Ambo.

2/ An assistant extension agent is trained at the CADU Training Center.

Table 26: BUILD-UP OF EXTENSION ACTIVITIES PER MPP AREA

Extension Staff	Observation Area	Demonstration Area	Minimum Package Area by Year				
			1	2	3	4	5
Supervisors	-	1	1	1	1	1	1
Agents	1	2	3	3	4	5	5
Assistant agents	-	-	2	2	3	4	5
Model farmers	-	10	45	85	100	100	100
Participating farmers	-	80	300	1,000	2,650	4,100	5,400
Farmers per agent	-	40	60	200	377	455	540
Cultivated area per farmer	-	5	4.63	3.49	2.38	2.00	1.76
Proportion of cultivated area fertilizer (%)	-	20	28	40	51	62	73

Source: Compiled from MPP Loan Application to IBRD/IDA, July 1972.

MP areas planned to increase at the rate of ten per year over a ten-year period, a broader geographical distribution of extension activities can be expected. Even then, a larger number of MP areas are likely to be around Addis Ababa as long as EPID maintains its policy of concentrating its activities along all-weather roads.

Farm Credit

142. Forms of Loans and Source of Funds: All loans are given in kind. Short-term loans are provided (or are planned to be provided) only in the form of seeds, fertilizer, herbicides and insecticides; and medium-term loans in the form of tools, farm implements and building materials for storage facilities.

143. EPID acts as an agent of the AID Bank in the provision of credit for the MPP. But future plans are for the AID Bank, or its subsidiary, the Agricultural Inputs and Marketing Services, to deal directly with cooperative societies as soon as they are formed. Farmers are charged 1% per month for the short-term loans and will be charged 8% per annum for the medium-term loans.

Table 27: DISTRIBUTION OF MPP EXTENSION ACTIVITIES BY PROVINCE 1971-72

Province	1971				1972		
	MPA	TA	DA	OA	MPA	DA	OA
Eritrea	1	-	-	12 /c	-	-	(12) /c
Begemdir	1	-	1	1	2	1	1
Tigre	1	-	1	5	2	2	2
Gojjam	1	-	1	4	2	1	2
Wollo	1	-	-	2	1	1	2
Wollega	1 /a	-	1	2	1(+1) /a	1	1(+1) /c
Shoa	3	1	2	13	5	3	7(+1) /c
Zilubabor	-	-	-	5	-	1	4(+1) /c
Kaffa	1	1	-	2	2	-	2(+1) /c
Arussi	-	-	-	-	-	-	-
Hararghe	1	-	-	7	1	1	6
Gemu Gofa	-	-	-	3	-	1	2(+2) /c
Sidamo	1 /b	-	-	3	1 /b	-	5
Bele	-	-	-	3	1	-	2
Total (excluding Eritrea)	11	2	5	50	19	12	36(+5) /c

Source: Loan Application to IBRD/IDA by EPID and Extension Division files of EPID.

/a Bako MPP, which is partly in Shoa and partly in Wollega.

/b Shashemere MPP, part in Sidamo and part in Shoa.

/c Figures in parentheses show number of areas that, after further investigation and if personnel is available, may become OA.

MP = Minimum Package Area; TA = Training Area; DA = Demonstration Area; OA = Observation Area.

144. Eligibility for Credit: Only farmers who cultivate 20 ha. or less, and who have settled all of their previous loans with EPID are eligible for credit.

145. Security Requirements: Credit in the first year is limited to a maximum of Eth$200, but it may be increased to Eth$400 in the second and subsequent years for farmers with good repayment records. No minimum credit limit is stipulated. At present, a 25% down-payment is required for all loans, but it has been proposed to lower down-payment requirements for short-term loans to 15%.

146. Like CADU and WADU, the MPP requires a written agreement from each borrower, with the loans secured by the personal guarantee of two persons of good repute living in the same extension area as the borrower. In areas where land is not communally owned, tenants are required to have their landlords sign a lease clause. If 90% of the borrowers in a given extension area have not repaid their loans in full within two months after the due date, no further credit operations are to be undertaken in the area.

147. As a further group security measure, a security fund will be established. A fee mounting to Eth$2.50 per quintal of fertilizer bought will be imposed on each participant (41). The money will be deposited in the AID Bank in separate accounts for each marketing center. The fund will be drawn on in the event that defaults in credit repayments in the extension area are concerned exceed the percentage covered by the bad-debt provision included in the fertilizer price, but it has to be refilled.

148. Screening of Credit Applicants: Loan applications are reviewed by extension agents with the help of model farmers to ascertain that the farmer in question lives within the model-farmer area and meets the necessary requirements for credit eligibility before they are passed to the extension supervisors.1/ The supervisors make the final screening before sending loan agreements to be signed by those whose applications have been approved.

149. Disbursement of Inputs: Under an agreement with the Ministry of Agriculture, the AID Bank (and in the future AIMS) 2/ is responsible for procuring inputs for the MPP. EPID gives the AID Bank an estimate of the inputs required for a given season on the basis of bulk-order dispatches made by each supervisor. The AID Bank undertakes to deliver the supplies to the various marketing centers on time.

Performance of the Credit Program

150. Number and Amount of Loans: A total of 3,613 farmers in 1970/71 and 4,809 farmers in 1971/72 participated in the credit program under the MPP (Table 28). About 6,160 quintals of fertilizer and 154 quintals of improved

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1/ "Cooperative Organizing Committees" will gradually take the place of model farmers in reviewing loan applications.

2/ See footnote 2, page 10.

seed varieties, valued at Eth$240,000, were distributed on credit in 1970/71. The corresponding figures for 1971/72 are 9,280 quintals of fertilizer and approximately 320 quintals of seed, valued at Eth$370,000.

Table 23: NUMBER AND AMOUNT OF LOANS, MPP, 1970/71-1971/72

Crop Year	Number of Loans	Amount of Loans (Eth$)	Average Loans (Eth$)	Inputs (q) Fertilizer	Inputs (q) Seed
1970/71	3,613	240,000	66	6,160	154
1971/72	4,609	370,000	80	9,280	320 /a
1972/73	-	-	-	-	-

Source: Compiled from the Credit files of Credit Section, EPID.

/a An approximate figure.

151. It is not clear why the average loan for year 2 was higher than that for year 1, since the same categories of farmers were allowed to participate in the credit program in both years. At least two possible hypotheses can be given, however. First, after seeing the impact of the fertilizer and the improved seeds on some segment of their plots during the first year, farmers might have decided to use them on all of their plots during the second year and taken more inputs on credit./1 Second, the MPP sets a maximum credit limit of Eth$200 for the first year and Eth$400 for subsequent years. Since many of the credit-takers cultivate over 10 ha. and therefore require inputs of at least Eth$400 if they follow recommended practices, it is reasonable to assume that some farmers borrowed more during the second year than during the first.

152. Distribution of Credit among Different Classes of Farmers: Due to data limitations, distributional analysis of the MPP credit program will be based on the first nine MP areas. Table 29 shows that 78% of all credit-takers were landowners, although the overall proportion of landowners in the areas covered is roughly estimated to be a little less than 50%. They took 90% of the seed and 67% of the fertilizer distributed on credit during the 1971/72 season.

1/ To state it differently, farmers might have been reluctant to take as much of the inputs as they would normally like in the first year because they had never tried them before, and thus they decided to hedge against risk by minimizing the size of their loan.

Table 29: CREDIT DISTRIBUTION IN NINE MP AREAS, BY TENANCY, 1971-72

MP Area	Participating Farmers				Seed				Fertilizer			
	Tenants		Landowners		Tenants		Landowners		Tenants		Landowners	
	No.	%	No	%	Q	%	Q	%	Q	%	Q	%
Shashemene	331	40.7	481	59.2	-	-	-	-	1,312.5	48.3	1,409.0	51.7
bako	9	11.1	72	88.8	0.75	11.1	6.4	88.9	19.0	14.0	116.5	86.6
Enda Selassie	-	-	107	100.0	-	-	5.9	100.0	-	-	92.0	100.0
Haik	-	-	49	100.0	-	-	8.1	100.0	-	-	19.0	100.0
Kersa	2	1.8	105	98.1	-	-	13.65	100.0	1.5	1.3	110.99	98.7
Gonder	-	-	122	100.0	-	-	5.8	100.0	-	-	170.5	100.0
Finote-Selam	6	5.9	95	94.1	-	-	11.74	100.0	4.5	6.8	69.0	93.2
Asendabo	85	19.4	354	80.6	2.75	45.8	3.25	54.2	65.25	18.4	290.25	81.6
Tulubolo	74	14.6	434	85.4	7.75	15.9	41.05	84.1	225.0	17.03	1,096.0	89.97
Total	507	21.8	1,819	78.2	11.25	10.5	95.89	89.5	1,625.75	32.55	3,373.24	67.45

Source: Compiled from Credit files provided by EPID.

153. These percentages are, however, somewhat misleading. Only in the Shashemene MP area was there a considerable proportion of participating tenants, which led to raising the aggregate proportion of the tenant credit-takers. 1/ Furthermore, most of the MP areas in the nothern provinces operate under a communal type of tenure, where there is no clear-cut landowner-tenant relationship. Therefore, a separate analysis of the six MP areas located in the southern provinces is given in Table 30: Shashemene, Bako, Kersa, Finote-Selam, Asendabo and Tulubolo.

Table 30: DISTRIBUTION OF INPUTS ON CREDIT IN SIX MP AREAS IN THE SOUTHERN PROVINCES, 1971-72

Category of Credit-Takers	Number of Credit-Takers		Seed		Fertilizer	
	No.	%	Q	%	Q	%
Tenants	507	24.76	11.25	12.88	1,625.75	34.49
Landowners	1,541	75.24	76.09	87.12	3,091.74	65.51
Total	2,048	100.0	87.34	100.0	4,719.49	100.0

Source: Compiled from Credit files of MP areas.

154. Even though over 50% of the cultivators in the southern provinces are believed to be tenants (49), the proportion of tenants who participated in the MPP credit program during the 1971/72 season was only 25% of all credit-takers. Tenants accounted for 13% of the seed and 34% of the fertilizer distributed that season, with the balance going to the landowning class. If the Shashemene area is excluded, the analysis shows that over 80% of the fertilizer and seed is taken by landowners.

155. A separate analysis using area cultivated as the basic for classification is given in Table 31. The majority of the participants during the 1971/72 season were the small farmers cultivating less than 5 ha. This result is to be expected since the average cultivated area for all MPPs is estimated to be 1.7 ha. (51).

1/ There is no clear explanation for the high tenant participation rate in the Shashemene MP area. However, it had been under an FAO fertilizer trial program for about three years before it became an MP area.

Table 31: DISTRIBUTION OF THE 1971-72 CREDIT IN NINE MP AREAS BY SIZE OF AREA CULTIVATED

Area Cultivated (ha.)	Credit-Takers No.	%	Seed Q	%	Fertilizer Q	%
Tenants						
0.0 - 4.9	283	55.8	3.00	26.6	460.00	28.3
5.0 - 9.9	144	28.4	6.25	55.6	652.25	40.1
10.0 - 14.9	47	9.2	0.50	4.4	263.50	16.2
15.0 - 20.0	33	6.6	1.50	13.4	252.00	15.4
Sub-total	507	100.0	11.25	100.0	1,627.75	100.0
Landowners						
0.0 - 4.9	1,042	57.2	42.10	43.9	1,113.62	33.1
5.0 - 9.9	456	25.1	26.80	27.9	952.10	28.2
10.0 - 14.9	186	10.2	14.73	15.4	566.50	16.8
15.0 - 20.0	135	7.4	12.30	12.8	741.00	21.9
Sub-total	1,819	100.0	95.90	100.0	3,373.22	100.0
Grand Total	2,326	-	107.15	-	5,000.98	-

Source: Compiled from Credit files of MP areas.

156. Fifty-six percent of the tenants and 57% of the landowners who participated in the credit program cultivated less than 5 ha. The tenants accounted for less than 27% of the seed and only 28% of the fertilizer distributed among all tenants, while the landowners took almost 44% of the seed and 33% of the fertilizer distributed among the landowning class. In general, however, the percentage of inputs taken is not too different from the percentage of area cultivated, for both tenants and owner-cultivators (Table 32). The reason that a larger proportion of the credit was taken by landowners is not that they used more of the inputs per hectare, but that they cultivated larger areas and had a higher participation rate in the credit program.

157. Credit Repayment Performance: Data on repayments classified by either tenancy or area-cultivated is not available. But interviews with several MP area supervisors indicated that in general small farmers have a better record of prompt repayment. In fact, most of the supervisors indicated that some big farmers deliberately refuse to settle their dues, a reversal of the pattern usually expected. One possible explanation is that a result of the prevailing socio-economic conditions in Ethiopia, borrowing and forced repayment has become a way of life for tenants and other small farmers, while big landlords are used to taking money (from tenants or treasuries) for which they do not need to account.

Table 32: COMPARISON OF INPUT DISTRIBUTION WITH DISTRIBUTION OF CULTIVATED LAND
MPP, 1971-72

Area Cultivated (ha.)	Tenants				Landowners			
	% of Credit-Takers	% of Area Cultivated	% of Fertilizer Taken	% of Seed Taken	% of Credit Takers	% of Area Cultivated	% of Fertilizer Taken	% of Seed Taken
0.0 - 4.9	55.80	23.97	28.3	26.6	57.2	24.32	33.1	43.9
5.0 - 9.9	28.40	36.59	40.1	55.6	25.2	31.93	28.2	27.9
10.0 - 14.9	9.20	19.88	16.2	4.4	10.2	21.70	16.8	15.4
15.0 - 20.0	6.60	19.56	15.4	13.4	7.4	22.05	21.9	12.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Computed from Table 31.

158. Some information is available from the Shashemene MPP for the 1971/72 season (Table 33). A comparison of the repayment performance, classified by both tenancy and area cultivated, does not indicate a clear-cut difference, but it shows that the repayment performance of tenants and small cultivators is by no means worse than that of the big owner-cultivators.

159. Table 34 gives a breakdown of the aggregate repayment rates of all MP and demonstration areas during the 1971/72 season. No repayments were made by the due date, and only 44% of the total loan was repaid two weeks after the due date. Six months after the due date 11% of the total loan was still outstanding. We may postulate that, first, for some MP areas the due date (February 28) is too early, as farmers are barely into the harvest season. Second, the due date is set at a time when product prices are lowest. Many farmers have expressed the feeling that it is unwise and harmful to sell at

Table 33: REPAYMENT PERFORMANCE OF DIFFERENT CLASSES OF FARMERS IN THE SHASHEMENE MARKETING CENTER, SHASHEMENE MPP, 1971-72

Category of Farmers	Credit-Takers		Total Loan		Repaid at Due Date		Outstanding at Due Date	
	Number	%	Eth$	%	Eth$	%	Eth$	%
By tenancy								
Tenants	117	38.6	14,133	45.1	3,584	25.4	10,549	74.6
Landowners	186	61.4	17,145	54.9	7,081	41.3	10,064	58.7
Total	303	100.0	31,278	100.0	10,665	-	20,613	-
By area cultivated								
Less than 5 ha.	134	44.2	6,940	21.2	3,199	46.1	3,741	53.9
Over 5 ha.	169	55.8	24,338	78.8	7,466	30.7	16,872	69.3
Total	303	100.0	31,278	100.0	10,665	-	10,613	-

Source: Compiled from Credit files of the Shashemene MPP, 1971-72.

such low prices. Third, farmers have to pay taxes, rent and other debts at about the same time that they are required to settle their dues with EPID. Fourth, in a few MP areas there were rain shortages during the 1971/72 season.

160. The impact of efficient supervision of the credit program on repayment rates cannot be easily quantified. Nevertheless, close observation of the MPPs indicated that repayment rates were higher in those areas whose

supervisors were rated highly by EPID on their overall performance. 1/ For example, Bako, Kersa and Tulu Bolo, which had highly rated supervisors, had better repayment rates (Table 35).

Table 34: REPAYMENT OF 1971-72 CREDIT DISTRIBUTED THROUGHOUT ALL MP AND DEMONSTRATION AREAS

Date	Amount Outstanding (Eth$) /a	% Outstanding
February 23, 1972 (due date)	250,148	100.0
March 15, 1972	139,583	55.8
April 15, 1972	103,061	41.2
May 26, 1972	62,037	24.8
June 14, 1972	42,279	19.7
July 26, 1972	30,018	12.0
August 28, 1972	27,016	10.8

Source: Compiled from EPID Credit files.

/a Includes interest charges.

Output Marketing

161. The MPP did not have any output marketing component during its first two years. For the future, the marketing component is to be carried out under a separate marketing and storage project. Under this project, storage facilities will be built at all MPP trade centers and a revolving fund set aside for grain purchases and hiring marketing consultants (42). The marketing consultants will assist EPID's extension staff in the establishment of marketing centers, the training of marketing assistants, the supervision of grain storage and handling operations and the dissemination of all forms of market intelligence.

1/ Supervisors are periodically rated by high-level EPID staff on the basis of their motivation and interest in their jobs, number of farmers they have reached, number of field days they have held, etc.

Table 35: REPAYMENT PERFORMANCES OF THE NINE MPPs DURING THE 1971-72 Season

MP area	Total Loan (Eth$)	OUTSTANDING CREDIT 3/15/72 Eth$	%	4/5/72 Eth$	%	5/26/72 Eth$	%	6/14/72 Eth$	%	7/26/72 Eth$	%	8/28/72 Eth$	%
Arsi	4,225	1,665	39.4	832	19.7	110	2.6	74	1.5	51	1.2	50	1.2
Awik	916	880	96.1	119	23.0	60	6.5	60	6.5	60	6.5	60	6.5
Gondar	6,015	6,015	100.0	4,608	76.6	1,005	16.7	1,005	16.7	517	8.6	517	8.6
Jimma	4,215	1,197	28.4	590	14.0	25	0.6	25	0.6	25	0.6	0	0.0
Nazareth Settlement /a	92,358	60,864	65.9	43,224	46.8	31,864	34.5	26,876	29.1	18,102	19.6	17,270	18.7
Nazareth-Selam	2,877	2,877	100.0	2,877	100.0	132	4.6	132	4.6	132	4.6	132	4.6
Nazareth Bolo /a	40,304	19,620	48.8	18,172	45.2	9,609	23.9	7,156	17.8	2,332	5.8	1,646	4.1
Wonda Selassie	3,220	2,225	69.1	1,449	45.0	1,182	36.7	1,179	36.6	930	28.9	930	28.9
Total	154,030	95,343	61.9	71,871	46.7	43,987	28.0	36,507	23.0	22,149	14.3	20,557	13.3

Source: Compiled from EPID Credit files.

/a Participated in FAO Fertilizer Program for two to three years.

Local Participation

162. Local participation in the MPP is to be promoted by establishing cooperative societies. However, it is too early to assess the achievements of the project in this area since it has been in operation for only two years.

163. Cooperative promotion is usually launched by the extension staff after the first input distribution season. "Cooperative Development Committees," which will be responsible for organizing their area farmers for a cooperatives training program, are established first. Training in cooperatives is to be offered in collaboration with the Ministry of Community Development.

164. EPID's objective is to develop all marketing centers into independent primary cooperative societies within three to five years after their establishment as marketing centers. Throughout the MPP, there were 10 registered primary cooperative societies and 18 pre-cooperative societies by the end of 1972 (Table 36). It should be clear, however, that the registered societies, in addition to being concentrated within few MP areas, are in their very infancy and are not self-sufficient.

Table 36: PROGRESS IN COOPERATIVE PROMOTION UNDER THE MPP, 1971-72

Project Area	Number of Registered Coops	Number of Coops Which Applied for Registration	Number of Pre-coops Which Formed Organizing Committees
Shashemene MPP	2	-	3
Tulu Bolo MPP	2	-	2
Asendabo MPP	-	-	3
Jimma MPP	-	-	2
Nazret MPP	3	-	-
Enda Selassie MPP	-	-	2
Haik MPP	1	-	2
Finote-Selam MPP	-	-	2
Gondar MPP	1	-	-
Kombolcha MPP	1	-	-
Total	10	-	18

Source: Compiled from EPID files.

Staffing and Training

165. Most of EPID's Ethiopian staff are trained in Ethiopian institutions. MP area supervisors are usually graduates of the College of Agriculture at Alemaya. Extension agents are graduates of the agricultural schools at either

Jimma or Ambo. Assistant extension agents have so far been trained at either the CADU Training Center or the Bako Mission Agricultural School; but future plans are that they will come from the three training schools to be established under the third IDA Education Project (44). Marketing assistants are trained at CADU but in the future they will be recruited from the Awasa Cooperative Training School. All subject-matter specialists have had some graduate level training abroad. By the end of 1972, there were about 14 expatriate staff, working as either subject-matter area specialists or deputies to Ethiopian division heads.

166. Two lines of promotion (academic and non-academic) are planned to gradually Ethiopianize EPID. After some years of field service, assistant extension agents and marketing foremen will be given a one-year theoretical training in an Ethiopian agricultural training school before being promoted to senior extension agents. After that, they will be able to advance to assistant supervisors and supervisors. Selected supervisors will be given postgraduate training to become either subject-matter specialists or provincial agricultural officers, and on the basis of their performance they could eventually be promoted to division heads within EPID.

Other Programs

167. Animal Husbandry: The MPP does not have any livestock program at the moment, but EPID plans to develop a livestock improvement program suitable for the MPP under its present setup. A team of experts will be assigned to plan pilot operations that can be conducted with existing field staff in cooperation with the Livestock and Meat Board and the Livestock Division of the Ministry of Agriculture (42).

168. Home Economics: EPID was organizing a team of home economics specialists in January 1973 to teach farmers' wives to better perform their tasks and to raise their educational level.

169. Soil Conservation: EPID has a proposal to establish a Soil Conservation Division to work full-time on MP areas (41). There will be four soil conservation survey teams (each with five specialists) to organize conservation plans, introduce new techniques on demonstration plots and model farmers' fields and supervise farmers carrying out conservation work.

170. Roads: On the assumption that beginning in the fourth year of its operation each MP area requires about 10 kms of new feeder roads each year, plans have been made for the construction of farm-to-highway roads at an estimated cost of about Eth$8,000 per km. In order to ensure that the program is not delayed after existing road networks are saturated (after the third year), penetration roads are planned at an estimated cost of Eth$12,000 per km. The annual maintenance cost for both kinds of roads is estimated at Eth$500 per km (44).

171. No organization present exists to plan, construct and maintain the kind of low-standard roads proposed for the MPP. The Ethiopian Government

has commissioned a study to determine how to establish such an organization. Until it is established, EPID must be responsible for its own rural road development.

VII. A COMPARISON OF THE MAJOR DEVELOPMENT COMPONENTS

172. On the basis of the detailed presentation of the components of each project given above, a summary of their outstanding similarities and differences will be presented.

Development of Innovations

173. Development of new technologies such as improved seeds, better cultural practices and improved labor-intensive farm implements is primarily a major component of the comprehensive projects (CADU and WADU). CADU's higher achievements in these areas seems due to its better equipment: its establishment of an autonomous Seed Division, its cattle breeding and semen production programs and its agricultural engineering activities geared toward developing labor-intensive farm implements. In comparison WADU has only been able to introduce some corn varieties from Kenya and has just started making progress in its cattle breeding program. WADU's lack of progress in innovation development seems to be related to poor staffing and planning. The MPP has so far relied on CADU and the Institute of Agricultural Research for its farm implement and improved seeds requirements.

Extension Activities

174. On the basis of the number of farmers they were able to reach, in accordance with their set targets, all three projects have been reasonably successful in their extension programs. In fact, WADU has already surpassed the target it set for the end of its Phase I. There are some distinct differences between the extension strategies followed by CADU and the MPP on one hand and WADU on the other. CADU and the MPP center their innovation demonstration activities around "model farmers" and "demonstration plots"; WADU conducts demonstrations on various farmers' plots, following the advice of farmers' "group-leaders" and "demonstrators" on which farmer's plot to use for its demonstration. Advantages and disadvantages can be seen in the two approaches. WADU's "demonstrators," who perform functions similar to the assistant extension agents of CADU and the MPP, have less formal education than the assistant extension agents. However, they are required to have an agricultural family background, and they are assigned to work in their own communities. They are familiar with the social and cultural values of the community, they speak the language, and above all they have the sense of belonging to the community. This practice differs distinctly from that followed by CADU and the MPP, where most extension agents do speak the language but do not originate from the area they are working in.

175. One could argue that in the case of activities whose impact is not readily visible and that require strict and continued supervision in order to show good results, the "model farmer" approach may be more effective. A good example would be the distribution of the high milking crossbred dairy cows whose management requirement is beyond what one can expect from the average peasant farmer.

Smallholder Credit

176. There is a nation-wide lack of institutional credit, public or private, to small-scale farmers due to stagnant institutional factors. Most land-holdings are too small and fragmented to justify bank loans; the landlord-tenant relationships are such that tenants are poor credit risks because they are subject to the will of their landlords and are unable to provide the security required to receive bank loans; the communal ownership of land in some areas prevents the issuance of mortgages. For this reason farmers had to rely on local money lenders for credit even though they are charged very high interest rates. 1/ This situation prompted all three projects to include credit as one of their major components.

177. Forms of Loans: Although the general setup of their credit programs is similar, distinct differences must be noted. The AID Bank is the only source of funds for all three projects. All of them provide loans in the form of farm inputs, but in addition WADU gives short-term cash loans for consumption purposes. WADU's justification for the cash loans is the Wolamo farmers' chronic borrowing for holiday celebrations: if WADU does not provide cash, they will borrow from their traditional sources at very high interest rates, thereby jeopardizing their ability to repay the loans provided by WADU for production.

178. Eligibility for Credit: After the first two years' experience of unrestricted participation in its credit program by all classes of farmers indicated that, contrary to its stated objectives, the big landlords were the major beneficiaries, CADU developed a policy that excluded the bigger cultivators. The MPP adopted CADU's modified policy from the outset. Only WADU allows all classes of farmers to participate in its credit programs as long as they are full-time farmers operating within its project area. Its justification is that landholdings in Wolamo are so small that one rarely finds farmers cultivating over 2 ha.

179. Security Requirements: WADU has more liberal security requirements than either CADU or the MPP: all it asks from a borrower is that he present two guarantors acceptable to the screening committee. In contrast both CADU and the MPP require down-payments, signed lease agreements between tenants

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1/ A more detailed discussion of the credit situation of the project areas is given in Appendix IV.

and landlords and two acceptable guarantors--one of whom has to be the landlord if the borrower is a tenant. As a further security measure all have adopted the policy of holding farmers jointly responsible for all of the credit given in their area.

180. Though not definitive, interviews with some field agents and project staff have indicated that due to the rather stringent security requirements of CADU and the MPP, the poorest segment of the target population may be excluded either because they cannot afford the required down-payment or because their landlords are not willing to sign the lease clause. Even for WADU, where the only requirement is two reputable guarantors, interviews have indicated that in some cases the poorest tenants find it difficult to find guarantors acceptable to the screening committees.

181. Screening of Credit Applicants: Both CADU and WADU have elected farmers' committees to aid in processing credit applications. In the MPP, credit applications are processed by supervisors and their extension staff with some help from model farmers. Extension agents are members of the farmers' committees in CADU. In WADU, the screening committee, which is composed only of farmers, makes the final decision on who is eligible for credit before bulk order dispatches are sent to the MCC Division.

182. CADU seems to have adopted a safer and more systematic screening procedure in having a series of checks (first by Extension Division and then by the Marketing, and Credit and Cooperative Division) after the model farmer area committees have processed credit applications. This development is understandable since its due date repayment rates have been declining and CADU has found it necessary to screen out the bigger farmers.

183. There seems to be contrasting evidence with respect to the effectiveness of the farmers' committees in processing credit applications. CADU finds it difficult even to bring committee members together, whereas WADU's MCC Division reports that the farmers' committees have been meeting regularly and have shown a lot of effort in trying to do a good job. This is a very distinct difference, particularly since neither CADU nor WADU have built-in incentives for committee members. The success in WADU may be due to the greater awareness of the Wolamo people of the project's functions and to the traditional social cohesiveness and familiarity with group actions and organizations of the Wolamos.

184. Disbursement of Inputs: The AID Bank supplies inputs, mainly fertilizer, insecticides and pesticides, to all three projects. Within the projects, disbursements are made through marketing centers scattered throughout the project areas.

Performance of the Credit Programs

185. Number and Amount of Loans: The number and amount of loans have been continuously increasing in all three projects except during the last two years in CADU (Table 37). The decline in the amount of credit distributed by CADU is related to the marketing problems it has had since 1970/71. As

Table 37: AMOUNT OF CREDIT AND NUMBER OF LOANS EXTENDED IN THREE PROJECTS, 1968-72

Crop Year	CADU			WADU			MPP		
	No. of Loans	Amount of Loans (Eth$)	Average Loan $	No. of Loans	Amount of Loans (Eth$)	Average Loan $ /a	No. of Loans	Amount of Loans (Eth$)	Average Loan $ /a
1967-68	189	15,700	83						
1968-69	868	158,450	180						
1969-70	4,759	502,876	106	727	23,035	32			
1970-71	14,071	1,395,703	102	3,923	80,169	20	3,613	240,000	66
1971-72	14,146	1,437,517	99	4,791	159,339	33	4,609	370,000	80
1972-73	12,625	1,108,632	88	7,040	303,960	43			

Source: CADU annual reports and Credit Section reports of WADU and the MPP.

/a Approximate figures.

a result of a general price decline throughout the country, CADU was forced to offer farmers lower prices per quintal than in previous years. Local traders and other vested interest groups took advantage of the situation to discredit CADU by arguing that CADU was only maximizing its profits by offering farmers lower prices. This argument seems to have convinced many farmers not to participate in CADU's credit program. Another reason is that many farmers did not see the need to fertilize their plots year after year, and others were using the seeds they bought from CADU in previous years. The continuous decline in the average size of loans in the case of CADU is due to the change in its credit policy which excluded the larger farmers.

186. A comparison of the quantities of inputs distributed (Table 38) shows that larger quantities of inputs have been distributed in CADU. Not only were the number of credit takers larger, but also cultivated area per participant is significantly larger (median farm size in Chilalo is about 3 ha. compared to about 0.5 ha. in Wolamo). More seed was distributed in CADU because carefully selected and tested varieties suitable to the area were generally available.

187. Distribution of Credit among Different Classes of Farmers: By changing its credit policy, i.e., by excluding the bigger cultivators from participating in its credit program, CADU was able to improve the share of the total loans of the small cultivators. In general, however, the larger cultivators accounted for larger quantities of the inputs distributed on credit in all three projects for the following reasons. First, the amount of inputs a farmer gets on credit are proportional to the number of hectares he cultivates; thus, larger cultivators will normally get larger quantities of inputs. Second, the large cultivators made up a very high proportion of those who took credit.

188. Thus the small cultivators have been getting a smaller proportion of the inputs distributed on credit not only because they own and/or cultivate a small proportion of the land but also because they have a lower rate of participation. An analysis of farmers' adoption of innovations in one of CADU's extension areas (Appendix III) has indicated that in general tenants are slower adopters. It was pointed out above that the lower rate of participation by tenants could be due to the fact that they find it harder to find acceptable guarantors because of their status, which is greatly determined by whether they own land or not. But most important, tenants may not find the whole concept of getting yield-increasing inputs on credit very rewarding under existing sharecropping arrangements where all costs are born by tenants without any compensation even for major improvements on the land.

189. Assuming that a tenant receives the most favorable share-cropping arrangement available in the CADU project area by paying the landlord only one-third of his harvest as rent and one-tenth of his share as land tax, Table 39 shows that over a 50% increase in yield is necessary to make use of improved seeds and fertilizer profitable to the tenant whereas any net increase in yield is profitable to the landlord. If costs are shared proportionately, yield increases of less than 30% make the venture profitable to the tenant under the above share-cropping arrangement.

Table 38: QUANTITIES OF SEED AND FERTILIZER DISTRIBUTED ON CREDIT, 1968-72

Crop Year	CADU		WADU		MPP	
	Fertilizer (q)	Seed (q)	Fertilizer (q)	Seed (q)	Fertilizer (q)	Seed (q)
1967/68	42	977	-	-	-	-
1968/69	2,577	4,515	-	-	-	-
1969/70	15,308	7,925	-	-	6,160	154
1970/71	46,000	13,500	1,191	333	9,280	-
1971/72	34,990	4,664	2,970	387	-	-
1972/73	35,519	2,894	-	-	-	-

Source: Credit Sections of CADU, WADU and the MPP.

Table 39: COMPARISON OF SHARES TO TENANT AND LANDLORD RESULTING FROM APPLICATION OF IMPROVED SEED AND FERTILIZER /a

	Tenants Paying All Inputs		Tenants Paying 60% of Cost and Landlord Paying 40%	
	Share for Tenants	Share for Landlords	Share for Tenants	Share for Landlords
Yield = 8q/ha.(33% increase)				
Increase in share ($)	-20.00	14.00	5.60	9.60
% of increase	-38	25	10.5	-20
Yield = 9q/ha.(50% increase)				
Increase in share ($)	- 4.00	24.00	17.6	- 1.60
% increase	- 7.7	50	34	- 3.3
Yield = 10q/ha. (66.7% increase)				
Increase in share ($)	4.00	32.00	29.00	6.40
% increase	7.7	67	57	15.2
Yield = 12q/ha.(100% increase)				
Increase in share ($)	28.00	48.00	53.6	22.4
% increase	54	100	103	46.5
Yield = 14q/ha.(133.3% increase)				
Increase in share ($)	52.00	64.00	77.6	38.4
% increase	100	133.5	149.4	80

Source: CADU Minor Research Task No. 1 and CADU 1966 Crop Sampling.

/a Based on CADU Crop Sampling 1967, yield per hectare for unfertilized local wheat variety is assumed to be 6q/ha., and price is assumed to be $20/q.

193. Credit Repayment Performance: Analysis of the repayment figures of all three projects show that small farmers are by no means worse defaulters than large farmers. In fact larger farmers constituted a higher percentage of the defaulters because, being politically powerful, they felt they could get away with unpaid debts. The refusal of these farmers to settle their debts probably led to a more far-reaching problem in the case of CADU. The due date repayment rates have been gradually declining as the number of borrowers increases. CADU's failure to take the first defaulters to court was very likely taken as a sign by other farmers that no action would be taken against them if they failed to repay.

194. Actually CADU has plans to take defaulters to court and makes this clear to all farmers before they are given credit, but it could not effectively implement them for a number of reasons. First, the court system is so inefficient that as prompt action as CADU would require is impossible. Second, close cooperation by the local administration is necessary in order to enforce repayments, and this cooperation has not been forthcoming. Third, local interest groups took advantage of the situation by arguing that CADU did not come to help farmers but to imprison them. Without full support and cooperation of local institutions and local administrations, the projects will continue to have difficulty enforcing their policies. It was pointed out above that CADU and the MPP require down-payments, based on the generally accepted belief that small farmers are worse credit risks than large farmers because they have a greater tendency to either divert production credit for consumption rather than to repay their debts. But experience from WADU, where no down-payment is required, seems to refute the argument, as WADU was able to achieve repayment rates of 98% in year 1 and 95% in year 2 compared to about 90% for year 1, 85% for year 2 and 92% for year 3 in CADU and about 90% for year 1 in the MPP.

195. Some observations could be made as to why WADU was able to achieve a higher repayment rate in spite of less stringent security requirements. Farmers in the WADU project area produce cash crops like coffee (in addition to grains) whose prices have been recently maintained at higher levels compared to cereals, giving them a better chance of making timely repayment. In contrast, farmers in CADU and the MPP grow mainly cereals whose prices have been recently continuously declining, thus jeopardizing the benefit of the credit program to the borrowers and consequently their ability to repay their debts. But the most important reason seems to be tied up with the borrowing habits of the Wolamos. They are used to borrowing for holiday celebrations from local money lenders at high interest rates. Since WADU has decided to give them this credit at much lower interest rates, they would like to maintain good faith with WADU by showing a willingness to pay back on time. This desire is further reinforced because WADU has from the beginning excluded all farmers from a given area from future credit programs if repayment for the area falls below 95%. CADU has just recently adopted such a policy.

196. The importance of a stricter credit collection system than the projects have so far followed cannot be over emphasized. Evidence from some

MP areas that had highly rated supervisors indicated that repayments could be higher under strict credit management. Even in WADU, where the problem of defaults has so far been minimal, it is necessary that speedy action be taken against defaulters before they set bad examples for other borrowers. It is important that borrowers understand that credit from the projects is like credit from private lenders. It should be further pointed out that full cooperation of local government administration is necessary to effectively implement a strict credit collection system.

Output Marketing

197. Only CADU and WADU have output-marketing components, as the MPP's marketing component has not been operative in the first two years. Although both attempt to ensure higher prices to participating farmers, their approaches have so far been different. CADU initially tried to create competition in the local markets by purchasing grains from farmers at prices Eth$0.50 to Eth$1.50 per quintal higher than existing prices. This led to considerable losses for CADU although the farmers' options for disposal of their grain were widened. During the 1971/72 season, CADU decided to offer a guaranteed floor price based on a forecasted average price for the year. This strategy also failed because unanticipated wheat imports by the Ethiopian Grain Corporation depressed prices far below the forecasts made by CADU. The third strategy, which was tried for a short period during the 1972/73 season, was to let farmers bear some of the marketing risks by instituting a two-payment system. Ninety percent of the existing local market price was set as the first payment, and second payments were to be made from money made by storing the product until prices reached a more favorable level. This strategy never worked because farmers refused to sell their produce to CADU, forcing CADU to revert to its original policy of making a 100% first payment.

198. WADU's marketing strategy is to let farmers participate in any risk involved with unexpected price declines. This is accomplished by paying farmers only 60% of the anticipated sale price of any product as a first payment, with a promise for a second payment if and when the realized sale price more than covers the first payment plus the handling and storage costs. WADU's main obstacle, in this respect, has been its inability to forecast product prices with some degree of certainty such that second payments are ensured. For example, it was unable to make second payments for some of the products bought during the 1971/72 season because they were still in stock by January 1973. Failure in making second payments could generate mistrust among farmers because WADU's first payments, particularly those for grains, are usually smaller than the prices local merchants offer.

199. There are at least two reasons why the marketing components of CADU and WADU have so far been ineffective. First, both CADU and WADU handle such an insignificant proportion of the total marketable surpluses of their respective areas that it is difficult for them to be able to influence prices to any significant degree. Second, their ability to compete effectively with private traders is greatly hampered by their relatively higher handling costs.

Their handling and storage costs are over Eth$6.00 per quintal compared to less than Eth$3.00 per quintal for the average trader. To provide a high enough price to the farmer, WADU would have to incur substantial losses. The long-term viability of their marketing divisions requires research into ways to reduce costs.

VIII. SUMMARY OF THE PROJECTS' COSTS

200. The cost figures of the three projects are not easily comparable for several reasons. First, the projects' components and their sizes are different; second, they have been in operation for different lengths of time; third, their cost figures are broken down differently; and fourth, the reliability of their cost figures differs considerably. Separate analyses of the projects' costs will therefore be given before making a rather crude comparison of the cost figures on the basis of the number of farmers reached and the number of hectares developed. In all cases, cost figures include all cost items (be they in cash or in kind) from all financial sources, excluding depreciation on buildings and equipment and interest on invested capital.

CADU

201. CADU's total cost is estimated at Eth$13.8 million during the 1967/68-1974/75 period (CADU Phase I) and Eth$30.5 million during the 1970/71-1974/75 (CADU Phase II) (35). The Swedish contribution includes salary and accommodation of the expatriate staff, cost of feasibility studies, drafting and engineering needs, training of staff outside Ethiopia and 67% of the investment and operating costs. 1/

202. The Ethiopian Government supplies the required land 2/and pays salaries and housing allowance of Ethiopian high- and middle-level staff. It also pays for training of non-project staff and the remaining share of the investment and operating costs. Costs of implementing results of feasibility studies are shared equally between the two governments.

203. Of the total Eth$13.8 million spent during CADU's Phase I, 43.1% was classified as operating costs and 56.9% as capital costs (Table 40). Investments in construction and staff salaries and accommodations, which accounted for 42.9% and 36.4% of the total costs, respectively, were the major costs.

1/ CADU's Phase I costs are actual expenditures; Phase II costs are budgeted.

2/ The project was given government land. In a few cases, privately owned land required by the project was acquired by giving the owners replacements from government land. No major purchase of land by the Ethiopian Government was needed except in a few instances.

Table 40: BREAKDOWN OF CADU'S ACTUAL COSTS, 1967-70 (Eth$)

	1967/68	1968/69	1969/70	Total	%
Operating Costs:					
Staff	772,100	1,752,900	2,520,400	5,045,400	36.4
Travel and transport	123,200	321,400	340,500	785,200	5.7
Administrative expenses	19,500	46,500	43,500	109,500	0.8
Purchases of services	85,200	255,500	494,300	835,000	6.0
Purchase of materials	284,000	543,700	1,647,500	2,475,200	17.9
Other costs (telex, etc.)	4,300	16,400	8,100	30,800	0.2
Gross operating costs	1,288,300	3,038,400	4,954,400	9,281,100	67.0
Revenue	249,200	907,600	2,154,800	3,311,600	23.9
Net operating costs	1,039,100	2,130,800	2,799,600	5,969,500	43.1
Capital Costs:					
Investment in construction	934,200	4,415,000	595,800	5,945,000	42.9
Investment on equipment and livestock	537,800	685,200	257,400	1,480,400	10.7
Investment on land	369,000	-	8,000	377,000	2.7
Investment on road	-	81,500	-	81,500	0.6
Capital costs	1,841,000	5,181,700	861,200	7,883,900	56.9
Total cost	2,880,100	7,312,500	3,660,800	13,853,400	100.0

Source: Compiled from information provided by CADU;s Finance Department.

Table 41: BUDGETED COSTS FOR CADU PHASE II, 1970/71-1974/75 (Birr)

Cost Categories	1970/71	1971/72	1972/73	1973/74	1974/75	Total $	Total £
Expatriate staff salaries	1,390,500	1,209,000	828,000	760,500	720,000	4,908,000	16.11
Ethiopian staff salaries	549,500	698,400	890,800	937,200	1,002,000	4,038,000	13.26
Net operating costs	1,136,500	1,219,000	1,337,600	1,255,400	1,201,700	6,150,200	20.22
Investment on construction	780,000	401,500	264,000	112,500	111,000	1,669,000	5.48
Investment on equipment	527,630	555,140	360,510	284,180	175,340	1,898,930	6.23
Other costs ("special costs")/a	490,000	482,000	450,000	434,000	434,000	2,290,000	7.52
Unallocated funds (reserves)	2,636,000	1,278,000	3,528,000	1,028,000	1,098,000	9,497,000	31.18
Total	7,540,230	5,844,040	7,619,040	4,821,780	4,672,040	30,461,130	100.00

Source: "Tentative CADU Programme 1970-75" CADU Publication No. 26.

/a These include costs for hiring consultants, training of high-level staff and contingencies.

274. A large proportion of the Phase II cost (31%) is listed as reserves (unallocated). Nonetheless, a comparison of the Phase I and Phase II costs indicates that capital costs are considerably lower for Phase II (21.7%) than for Phase I (56.7%). If the unallocated funds are excluded, 71% of all costs for Phase II are operating costs, with staff salaries alone amounting to about 43% of the total allocated costs over the five-year period (Table 41).

WADU

275. It is difficult to provide any reliable and detailed breakdown of WADU's cost figures. First, the 1968 Credit Agreement (Credit 268-ET) between the Ethiopian Government and IDA, on which disbursements are based, provides highly aggregated cost categories. Second, cost figures given in the Appraisal Mission Report of October 1969 are broken down in more detail but are substantially different from those given in the Credit Agreement. Third, WADU's financial records do not allow classification of costs by project components or activities. Fourth, conflicting cost figures are provided by the various sources. For purposes of this analysis, cost figures provided by WADU's Finance Division and the World Bank's Supervision Reports will be utilized.

276. A comparison of the planned spending over a six-year period and the actual spending over a four and one-half year period shows some substantial changes in the expenditure on certain activities (Table 42). In part, this reflects the discrepancy between the project proposal and its implementation. For example, very little work has been done so far on water development (as was pointed out above in more detail), and unforeseen expenses were incurred on Ethiopian staff housing. Above all, the reason that the total budget is being spent so much faster than anticipated (over four and one-half years instead of over six years) is not very clear. Of course, implementation of the extension, credit and marketing programs has been faster than anticipated, but even such a high rate of implementation cannot be totally attributed to WADU's efficient methods. On the basis of observation of the project-area population and a close scrutiny of the project proposal, it seems that the adoption and participation rates of the target population were underestimated at the planning stage. Furthermore, it is difficult to explain why expenditures on staff over a 55-month period should be 16% higher than that planned over a 73-month period.

277. A breakdown of Phase I costs over a four and one-half year period is given in Table 43. Capital expenditure on buildings, other construction, machinery and other equipment accounted for about 36% of the total Phase I costs. Staff salaries alone constituted about 43%, and operating and maintenance costs made up 21%. Of the total Phase I costs, IDA credit covered 53.4%, Ethiopian Government contribution covered 23.3%, and UK and WFP contributions covered 7.3% (Table 44).

Table 42: COMPARISON OF ORIGINAL PROVISIONS AND ACTUAL PHASE I COSTS OF WADU (Eth$) /a

Cost Category	1969/1971 (Year 1)	1971/1972 (Year 2)	1972/1973 (Year 3)	1973/1974 (Year 4)	Total (over 4 1/2 years)	Original provision (over 5 years)
Category I						
Vehicles, tractors, equipment and inputs	1,174,427	231,201	77,250	115,000	1,597,878	2,171,094
Foreign staff, ADS	372,280	203,025	186,000	102,000	863,305	1,327,464
Foreign staff, UK	13,356	70,792	86,054	52,554	222,756	222,756
Sub-total	1,560,063	505,018	349,304	269,554	2,683,939	3,721,314
Category II						
Local staff	487,970	899,093	1,029,000	1,210,000	3,616,063	2,835,714
Local staff allowance	81,291	92,184	100,000	82,000	355,475	-
Construction of civil works	535,478	1,146,397	150,000	175,000	2,006,875	1,595,089
Operation and maintenance	467,697	753,709	675,750	531,000	2,429,156	2,658,483
Sub-total	1,572,436	2,891,383	1,945,750	1,998,000	8,407,569	7,089,286
Category III						
Contingencies(unallocated)	-	-	-	-	-	839,219
Other costs IV						
UK aerial photography	75,000	-	-	-	75,000	250,000
World Food Program (food)	-	138,890	43,830	375,030	557,750	1,410,691
Sub-total	75,000	138,890	43,830	375,030	632,750	1,670,691
Total	3,207,499	3,535,291	2,338,884	2,642,584	11,724,258	13,312,415

Source: Calculated from various Supervision Mission reports and cost figures on UK technical assistance provided by WADU's Finance Division.

/a Year 3 and year 4 costs are budgetee costs.

Table 4.1: ACTUAL WADU PHASE I COSTS, 1969-74 (Eth$) /a

Cost Category	Nov. 1969- July 1971 (Year 1)	July 1971- July 1972 (Year 2)	July 1972- July 1973 (Year 3)	July 1973- July 1974 (Year 4)	Total (Year 1- Year 4)
Buildings and construction					
Residential buildings	221,875	493,993	-	-	715,869
Office and stores	49,175	127,069	-	-	176,245
Factory (brick)	50,010	-	-	-	50,010
Workshop	11,900	-	-	-	11,900
Farm	35,500	-	-	-	35,500
Other buildings	10,535	-	50,000	-	60,535
Water and supply facilities	58,320	-	-	-	58,320
Road and drainage	30,450	14,468	100,000	175,000	319,918
Clearing (land)	57,710	39,000	-	-	96,710
Aerial photography (UK)	75,000	-	-	-	75,000
Unaccounted construction expenses	-	471,867	-	-	471,867
Sub-total	610,478	1,146,397	150,000	175,000	2,081,875
Machinery and equipment, etc.					
Vehicles	337,577	133,234	-	60,000	530,811
Tractors	114,493	-	-	-	114,493
Other machinery	523,768	-	-	-	523,768
Processing centers (coffee)	34,642	40,785	36,000	20,000	131,427
Implements	51,564	-	-	-	51,564
Food (World Food Program)	-	138,890	43,830	375,030	557,750
Fertilizer and insecticides	112,383	57,182	41,250	35,000	245,815
Sub-total	1,174,427	370,091	121,080	490,030	2,155,628
Staff salaries					
Ethiopian	487,970	899,093	1,019,000	1,210,000	3,616,063
Expatriate staff, ADS	372,280	203,025	186,000	102,000	863,305
Expatriate staff, UK	13,356	70,792	86,054	52,554	222,756
Per diem and air fares	81,291	92,184	100,000	82,000	355,475
Sub-total	954,897	1,265,094	1,391,054	1,446,554	5,057,599
Operating and maintenance					
Roads	-	2,697	-	-	2,697
Vehicles and tractors	236,017	358,331	440,000	325,000	1,359,348
Others	191,705	386,025	227,750	190,000	995,481
Livestock	39,974	6,655	9,000	16,000	71,630
Sub-total	467,697	753,709	676,750	531,000	2,429,156
Total	3,207,499	3,535,291	2,338,384	2,642,584	11,724,258

Source: WADU Finance Division, November 1972.

/a Year 3 and Year 4 figures are estimated.

Table 44: FINANCING OF WADU PHASE I COSTS, 1969/70-1973/74

Financial Source	Eth$	%
IDA	8,135,744	69.39
Ethiopian Government	2,733,000	23.31
United Kingdom	297,750	4.76
World Food Program	557,750	2.54
Total	11,724,250	100.00

The MPP

208. The total cost for the MPP over a six-year period (1971-76) is estimated at about Eth$70 million (Table 45). Cost estimates for 1971-73 were based on EPID's Loan Application to IBRD/IDA and for 1974-76 on the MPP's Appraisal Report. The foreign exchange component of the Eth$54 million allotted for the 1974-76 period amounts to about 45%. Since the cost figures were based on 1972 prices, a price contingency allowance is made for price increases of 4% per year (44).

209. Investments account for 26% of the total cost, compared to 14% for farm inputs and 49% for operating expenses. Staff salaries alone account for 28% of the total 1974-76 costs (44). Technical assistance from SIDA and FAO and contributions by the Ethiopian Government will cover the first three years' costs. During the second three years, IDA credit is expected to cover about 81% of the total project costs, 1/ technical assistance from SIDA about 9%, Ethiopian Government contributions about 7% and contributions from participating farmers about 3% (Table 46). Farmers' contributions represent the down-payments for purchasing farm inputs on credit.

1/ IDA credit will cover 80% of the foreign costs and 82% of the local costs.

Table 45: BREAKDOWN OF THE MPP'S ESTIMATED COSTS, FISCAL YEARS 1971-75 (Eth$1000)

Cost Category	1971	1972	1973	1974	1975	1976	Total $	Total %
Farm inputs								
Fertilizer	293	512	2,208	1,170	1,687	1,952	8,122	11.57
Seed	11	27	122	94	215	419	889	1.27
Farm implements	-	13	43	33	55	79	223	0.32
Storage	-	-	10	10	25	47	92	0.13
Miscellaneous supplies	-	-	-	86	125	150	361	0.51
Sub-total	304	552	2,383	1,393	2,108	2,647	9,687	13.80
Capital investments								
Headquarters	14	71	547	612	292	92	1,638	2.32
Observation areas	73	9	9	9	9	9	118	0.17
Demonstration areas	108	164	137	137	137	137	820	1.17
MP areas	96	126	163	930	936	1,016	3,267	4.66
Roads	-	-	-	316	2,856	8,513	12,185	17.36
Coop development	-	-	-	55	55	55	195	0.28
Sub-total	291	370	856	2,569	4,295	9,832	18,213	25.95
Operating expenses								
Headquarters	882	1,301	2,727	3,060	3,153	2,630	13.753	19.60
Observation areas	243	262	254	286	286	286	1,617	2.30
Demonstration areas	187	388	341	341	341	341	1,939	2.76
MP areas	651	1,494	2,348	2,995	3,930	4,858	16,276	23.19
Coop development	-	-	-	81	162	243	486	0.69
Sub-total	1,963	3,445	5,670	6,763	7,872	8,358	34,071	48.54
Project prep. and planning	-	-	-	765	765	770	2,300	3.28
Price contingency	-	-	-	858	1,713	3,334	5,905	8.42
Total project cost	2,558	4,667	8,909	12,348	16,753	24,941	70,176	100.00

Source: MPP Project Loan Application to IBRD/IDA, May 1972 and MPP Appraisal Mission Report, March 1973.

Table 46: PROPOSED FINANCING FOR THE 1974-76 PERIOD, MPP
(Eth$ millions)

Cost Category	Source of Funds				
	Farmers	Eth. Government	SIDA	IDA	Total
Farm inputs	1.52	-	-	4.62	6.14
Rural roads	-	-	-	12.19	12.19
Extension services	-	3.84	4.99	18.68	27.51
Project preparation and planning	-	-	-	2.30	2.30
Unallocated	-	-	-	5.91	5.91
Total	1.52	3.84	4.99	43.70	54.05
Percentage	2.81	7.10	9.24	80.85	100.00

Source: MPP Appraisal Mission Report, March 1973.

Comparison of the Projects' Costs

210. It was indicated that, among other things, difference in cost categorization by the three projects makes cost comparisons difficult. In an effort to overcome this shortcoming and arrive at some comparable cost figures, estimation of per hectare development costs and costs per farmer reached will be made. Some simplifying assumptions will be necessary, however. "Developed land" refers to either fertilized land and/or land planted with improved seed varieties. Other land improvements such as soil conservation and improved seedbed preparation are not considered, not because they are unimportant but because they cannot be fully taken into account on the basis of available information.

211. The assumptions can be justified on the basis of the projects' major goal of raising the incomes of small farmers, which is to be attained through increased crop yields per hectare. This method implies that improved seeds and fertilizer are the best means of attaining the major goal. The hectarage estimations for WADU and the MPP (on the basis of the above assumption) were found to be very close to the estimates given by WADU's project direction and the MPP's Appraisal Mission Report (Table 47). CADU's figures could not be compared with other estimates.

212. Another problem is to identify the number of farmers the projects have reached. Should the number of farmers "reached" be defined as those who have received extension services (i.e., those who have actively participated in the demonstration of innovations), or only as those who have received extension, credit and marketing services ? This problem diminishes for WADU because the same number of farmers have been reached by the extension, credit and marketing activities. Besides, since all farmers are eligible to participate in WADU's credit program, it can be argued that if a farmer is convinced of the value of the innovations as demonstrated by the extension program, he will normally take the inputs provided by WADU as there is no other source in the area.

213. In the case of CADU and the MPP, the larger farmers, who normally take advantage of the extension programs but are ineligible for credit, get the inputs for cash from them and from private suppliers for cash or on credit. These farmers are not included in this analysis, which probably therefore underestimates the actual number of farmers reached and hectares developed. Nevertheless, all costs are incurred in trying to reach the smaller farmers (irrespective of the effort's effect on the larger ones). It seems appropriate, therefore, to assign all costs to the target population, i.e., the small farmers.

214. Table 47, which gives a yearly breakdown of the total cost, number of farmers reached, cost per farmer, number of hectares developed, and per hectare development costs for each project, has been prepared on the basis of the above assumptions. The capital costs incurred in a particular year should not normally be totally accounted for that year, but there was no information on rates of depreciation. Admittedly the figures are rather crude, and in some cases their reliability could be legitimately questioned, yet they point out some interesting relationships. In all three cases, both costs per farmer reached and costs per hectare developed were higher at the beginning because fewer farmers participated and because a larger portion of the costs was incurred on infrastructure (mainly buildings). As the projects progressed, however, costs per farmer and per hectare declined considerably. What is surprising is that cost per farmer seems to be about the same for all three projects, even though the number and intensity of their components are different. In fact, cost per hectare developed seems to be generally lower for CADU than for either the MPP or WADU. If these figures reflect an accurate picture, the 1971-75 Minimum Package Program can hardly be defended as being cheaper than the comprehensive projects.

Table 47: ANNUAL BREAKDOWN OF THE TOTAL PROJECT COSTS PER FARMER AND PER HECTARE FOR CADU, WADU AND THE MPP /a

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76
ADU									
Total project costs (Eth$)	2,880,100	2,312,500	3,660,800	7,504,230	5,844,040	7,619,040	4,821,780	4,672,040	-
No. of farmers reached	189	868	4,769	14,146	14,071	15,000	15,000	15,000	-
Cost/farmer	15,239	8,239	768	531	415	508	321	312	-
No. of ha. dev.	977	4,515	15,308	46,000	34,990	35,519	35,000	35,000	-
Cost/hectare	2,948	1,620	239	163	167	215	138	134	-
ADU									
Total project costs (Eth$)	-	-	3,207,499 /b	-	3,535,291	2,338,884	2,642,584	-	-
No. of farmers reached	-	-	-	3,923	4,791	7,040	8,000	-	-
Cost farmer	-	-	-	818	738	332	330	-	-
No. of ha. dev.	-	-	-	520	2,535	6,682	9,538	-	-
Cost/hectare	-	-	-	6,168	1,395	350	277	-	-
PP									
Total project costs (Eth$)	-	-	-	2,558,000	4,667,000	8,909,000	12,348,000	16,753,000	24,941,000
No. of farmers reached	-	-	-	3,613	4,609	13,600	30,000	57,000	97,000
Cost farmer	-	-	-	708	1,013	655	412	294	257
No. of ha. dev.	-	-	-	4,800	9,800	26,300	52,300	90,100	148,100
Cost/hectare	-	-	-	533	476	339	236	186	168

ource: "Tentative CADU Program 1970-75; Appraisal of the Minimum Package Program," March 1973; and tables from this report.

1 Estimates beyond 1972/73 are based on the Appraisal Report for the MPP, Tentative CADU Program 1970-75 for CADU, and Project Direction estimates for WADU.

2 Year 1 for WADU covers about 17 months (1969-71).

IX. BENEFITS GENERATED BY THE PROJECTS AND THEIR DISTRIBUTION

Estimation of Benefits

215. It is impossible to make a numerical estimate of all of the benefits of the package projects. The best assessment must be a combination of numerical value for the changes in net income due to the projects' activities and qualitative measures such as changes in outlook and expectation of the target population, changes in their living conditions, and changes in their consumption and expenditure patterns.

216. "Estimated benefits" in this analysis refer to increased crop yields resulting from the introduction of new technologies and from increased prices due to improved marketing provided by the projects. Several important benefits have been left out of the analysis due to difficulties in quantification. For example, benefits arising from improved local implements, from improved seed varieties distributed outside of the project areas, from the creation of employment from the improved health of livestock as the result of the veterinary activities and from home economics activities have not been accounted for. Thus, the estimated benefits here are "minimum benefits."

217. The comprehensive projects, which have several components such as water supply and health programs whose benefits are not as easily counted as increases in yields, and which considerably benefited farmers outside project areas, find their benefits underestimated with respect to the MPP. In fact, since the MPP is a direct outgrowth of the comprehensive projects, primarily CADU, some of the benefits generated in MP areas should accrue to the comprehensive projects.

Estimation of the Economic Rate of Return

218. Estimation of the economic rates of return for WADU and the MPP are based on projections made by the appraisal missions of the two projects. 1/ Since these two projects, particularly the MPP, have been in operation for a short time and since their data base is very poor, it was not possible to make an ex-post benefit/cost analysis as a means of updating the projected economic rates of return. CADU's estimate was periodically up-dated as more information became available.

219. In all cases, all project costs have been included net of taxes, duties and revenues accruing to the projects. In the case of WADU, no residual value has been assumed for project houses and buildings because no immediate use was seen if the project terminated after Phase I, but since Phase II is being prepared and the buildings have a positive salvage value, the rate of return for Phase I has been underestimated. Both for WADU and the MPP, a shadow wage rate of zero has been assumed for incremental family labor and for unskilled labor for road construction and maintenance. This assumes that the cost of the economy for unskilled labor is zero in terms of foregone production.

1/ Details in Appendix VI.

220. Other adjustments have been made for estimating the rate of return for the MPP. For example, costs of applied research, animal husbandry and home economics activities have been excluded because they relate to future innovations not taken into account in the benefits. Since the number of new farmers participating is expected to fall sharply after an MPP has been in operation for seven years and is expected to cease after nine years, operating costs per MPP have been made to decline gradually as the need for extension services is expected to decline over time.

221. The economic rate of return for CADU was estimated at 18%, over a period of thirteen years. Current estimates put it at 19% over a period of ten years, which is in fact a conservative estimate since cost estimates have so far been coinciding with actual costs while realized economic benefits have been greater than expected. This estimate of the economic rate of return is based on the assumption that CADU's Seed Division, Cattle Breeding Division and Marketing Division will keep operating as self-sustaining units throughout the life of the project.

222. The economic rate of return for WADU, over a twenty-year period, is estimated at 13%. If farm labor costs are included at the on-going rates, instead of at a zero shadow wage rate, the rate of return drops to 11%. By roughly dividing project costs into 54% for the highlands and 46% for the settlement schemes, the Appraisal Mission estimated a rate of return of 9.5% for the highlands and 17% for the settlement schemes (45). Assumed crop yields of 13, 12 and 8.5 quintals per hectare in the highlands underestimated the benefits because year 2 average yields in the highlands were 21, 17 and 9 quintals per hectare for maize, wheat and teff, respectively. Settlement benefits were also underestimated, as assumed yields per hectare were 18, 5.6 and 5 quintals for maize, cotton and chilies, respectively, whereas average year 2 yields were 24, 10 and 9 quintals. Furthermore, WADU's marketing activities with ginger, hides and tobacco generate some benefits which have not been accounted for in estimating the rate of return. On the other hand, the project has been spending more than anticipated, leading to an overestimated rate of return.

223. The economic rate of return for the MPP as estimated by the Appraisal Mission is 16% over a twenty-five year period. This estimate is conservative compared to the 40% estimated by the preparation team of the MPP Loan Application to IBRD/IDA (41). An increase of 20% in the cost of inputs would lower the rate to 11%; an increase of project benefits by 10% would raise the rate to 21%; and the combined effect of both factors would give an economic rate of return of 17%.

224. The projected economic rates of return should not be taken at face value due to the experimental nature of the projects, especially in the case of WADU and the MPP because the quality of data on which the projections were based is very poor. Better estimates could be derived as more experience is gained from the projects themselves and as estimates are updated periodically. Since the intensity of extension and supporting activities is smaller in the MPP than in the comprehensive projects, MPP's risk is probably greater

even though it deals with innovations already tested by the comprehensive projects. EPID has had little experience in implementing such an extensive program so rapidly. Besides, most of EPID's expatriate staff are available only for very short-term contracts, so that their understanding of local situations and consequently their ability to make expected contributions may not be fully realized. Furthermore, the most critical components of the projects, credit and marketing, are expected to be undertaken by cooperative societies, whose success under existing institutions, standards of infrastructure and management skills of peasant farmers is very questionable.

225. This argument is not intended to imply that the projects should not have been undertaken but merely to point out the danger involved in putting too much confidence in the estimated rates of return. In fact, programs like CADU, WADU and the MPP, which offer the best means available of reaching a large proportion of Ethiopia's rural population, could be justified even if the rate of return was much lower, if the country's major objective is in fact to improve the lot of rural people.

Distribution of Benefits

226. Distribution of the benefits generated in these projects is closely related to the way the income-increasing inputs have been distributed. It was pointed out in the section on credit that after finding a marked tendency for the benefits to be maldistributed in favor of the wealthier large-scale farmers, CADU limited participation in its credit program to cultivators of 20 ha. for landowners and 30 ha. for tenants. All categories of farmers participate in WADU's credit program, the justification being that holdings in Wolamo rarely exceed 2 ha. The MPP has at the outset limited participation to cultivators of less than 20 ha.

227. Substantial benefits have accrued to project-area farmers since the initiation of CADU. Recent estimates by the Planning and Evaluation Section show that the average real income of farmers actively participating in the project has been increasing at an annual rate of 50%, or Eth$337(7).1/ The real income of the average household in the project area as a whole, including non-participants in CADU activities, has been increasing at 10% per year, or Eth$75 per year (7). Compared to CADU, benefits generated by both WADU and the MPP have so far been small. Year 2 benefits for WADU, due to improved seed varieties and fertilizer, are roughly estimated to be Eth$106,000; year 2 benefits in nine MPPs due to fertilizer alone are estimated at Eth$580,000; and year 2 benefits due to improved wheat varieties and fertilizer in CADU are estimated to be over Eth$630,000.2/ In fact, by year 4 CADU-generated benefits almost Eth$4 million.

1/ The incremented income per farmer, participating in WADU's activities, is estimated at Eth$65 (or 35%) for year 2 (59).

2/ Estimation of these benefits will be pointed out below.

Of course costs are higher for CADU than for either WADU or the MPP, but benefits are expected to exceed costs by year 8 in the MPP compared to year 6 in both CADU and WADU (Appendix VI).

228. The benefits are based on net yield increases due to fertilizer and improved seed varieties. Because CADU's credit policy has changed after a review of its credit program, analysis of the distribution of benefits will include the first three years of CADU to see the effect of the two policies. Analysis of the distribution of benefits in both WADU and the MPP will be based on only one year's activities due to limitations in data. However, since there was no policy change in either project, it is very unlikely that the distribution of the benefits among different categories of farmers will be significantly different from one year to another.

229. Estimates of the net yield increases due to CADU-provided seeds and fertilizer is given in Table 48. Table 49 gives a breakdown of the gross benefits among different categories of farmers. Area owned, instead of area cultivated, is used as a proxy for the income measure mainly because accurate information on area cultivated was not available. In some cases, however land owned could be a better measure of income than area cultivated because a landowner may himself be cultivating a small piece of land while at the same time leasing large tracts on a sharecropping or cash-rental basis.

Table 48: ESTIMATES OF INCREMENTAL YIELDS DUE TO IMPROVED SEED AND FERTILIZER, CADU, 1967-70 (IN QUINTALS)

Project Area	1967/68		1968/69		1969/70	
	Due to Seed	Due to Fertilizer	Due to Seed	Due to Fertilizer	Due to Seed	Due to Fertilizer
North	5	3	5	3	2	5
South	3	0	3	4	1	3

Source: CADU Crop Sampling Studies and CADU Publication No. 66.

230. Distribution of benefits is very much parallel with the distribution of credit (Tables 6 and 49). Thus, there was a distinct gradual shift in benefit distribution in favor of tenants and small owner-cultivators after CADU adopted a restrictive credit policy. 1/ It should be noted, however, that one-third or one-half of the tenants' gross benefits will actually go as rental payments to the landlords, who contribute nothing to production costs.

1/ Even though the big landlords have been gradually excluded from directly participating in CADU's credit program, they were financially able to buy fertilizer and improved seeds for cash, and even on credit, from private fertilizer companies.

Table 49: DISTRIBUTION OF CADU'S GROSS BENEFITS, 1967/68-1969/70

Size of Land Owned	1967/68				1968/69				1969/70			
	No. of Beneficiaries	Total Benefits ($)	Average Benefits ($)	%	No. of beneficiaries	Total Benefits ($)	Average Benefits ($)	%	No. of Beneficiaries	Total Benefits ($)	Average Benefits ($)	%
Tenants	16	2,925.00	182.80	3.53	134	1,463.90	258.50	5.49	1,540	36,160.60	234.80	22.73
1-10 ha.	81	12,216.80	130.80	14.75	538	17,750.70	405.30	28.11	1,903	59,220.90	311.20	37.22
11-20 ha.	36	15,941.30	442.80	19.25	144	13,797.30	958.10	21.85	441	28,507.30	646.70	17.92
21-40 ha.	21	24,238.50	1,154.20	29.27	66	8,067.40	1,222.30	12.77	179	14,201.80	793.40	8.93
Above 40 ha.	18	25,740.00	1,430.00	31.08	54	16,978.50	3,144.20	26.89	54	5,310.50	983.40	3.34
Unclassified	17	1,755.00	103.20	2.12	32	3,087.70	964.90	4.89	652	15,680.80	249.60	9.86
Total	189	82,816.60	438.20	100.00	868	63,145.50	727.4	100.00	4,769	159,093.90	334.0	100.00

Source: Compiled from CADU Publication No. 66 and Crop Sampling Studies.

Table 50: GROSS BENEFITS DUE TO FERTILIZER AND IMPROVED SEEDS

Crops by Area	Pre-project Yield(q/ha.)	Yield Year 2 (q/ha.)	Net Yield Increase (q/ha.)	Year 2 Acreage (ha.)	Acreage Price Year 2($/q)	Gross Benefits($)	% of Benefits
Highlands							
Maize	8.0	21.0	13.0	199	2	29,855	7.4
Wheat	9.0	20.0	11.0	69	20	15,180	3.7
Teff	5.5	10.0	4.5	908	25	102,150	25.1
Settlements							
Maize	12.0	24.0	12.0	940	12	135,360	33.3
Cotton	1.4	10.0	8.4	223	55	103,015	25.4
Chillies	1.0	9.0	8.0	43	60	20,640	5.1
Total						406,201	100.0

Source: Compiled from WADU Annual Report, Year 2, and MCC Division files.

231. Since inputs are given out on the basis of the number of hectares a farmer cultivates, the absolute amount of benefits going to the larger farmers is greater. In this respect, the distribution of benefits is not very different from the distribution of land. But the per hectare benefits can differ depending on whether a farmer uses modern machinery or not. Assuming a wheat-wheat-maize-rape rotation, CADU estimated the net revenue per hectare to be Eth$228 for farmers using their own machinery, Eth$177 for those using rented machinery, and Eth$126 for non-mechanized farms. There is no information on the proportion of farmers using modern machinery (29). But in as much as the larger farmers are the most likely users of modern machinery, their benefits must be higher on a per hectare basis too.

232. Estimation of WADU's gross benefits due to improved seeds and fertilizer for year 2 is shown in Table 50. Sixty-three point eight percent of the gross benefits of the project were derived from the settlement schemes, compared to only 36.2% from the highlands where the number of farmers is much larger. This difference implies that the settlers were the major beneficiaries, if it is assumed that the benefits generated at the settlement schemes are distributed there.

233. Hectarage on different crops under fertilizer or improved varieties, classified by different categories of farmers, is not available for WADU. However, assuming that the amounts of fertilizer taken by different categories of farmers give a rough indication of how the benefits were distributed, table 51 indicates how year 2 gross benefits were distributed among the highland farmers. The landowners, who accounted for almost 80% of the beneficiaries, accounted for almost 83% of the gross benefits, compared to only 11% and 6% for the tenant-owners and tenants, respectively.

Table 51: DISTRIBUTION OF YEAR 2 GROSS BENEFITS IN THE HIGHLANDS BY TENANT

Classification by Tenancy	Beneficiaries		Fertilizer Taker		Benefits	
	Number	%	Quintals	%	Eth$	%
Tenants	199	11	128	11	16,190	11
Tenant-owners	112	10	75	6	8,831	6
Landowners	1,460	79	988	83	122,165	83
Total	1,771	100	1,191	100	147,186	100

Source: Calculated from information on year 2 Credit Program.

234. As in WADU, information on the area under different crops is not available for the MPP. However, the rate of fertilizer application is known and estimates of incremental output due to the use of fertilizer are available. Therefore, a rough estimation of the gross benefits due to fertilizer can be made using EPID's estimate of cereal area under different crops and is shown for the 1971/72 season in Table 52. Since 5,000 quintals of fertilizer were distributed that season and the standard rate of application is one quintal of fertilizer per hectare, then fertilized hectares under different crops are estimated using the percentage breakdown of area under different crops provided by EPID.

Table 52: ESTIMATION OF 1971/72 GROSS BENEFITS DUE TO FERTILIZER IN NINE MPP AREAS

Crop	% of Total Cereal Area	Total Area (ha.)	Incremental Yield (q)	Incremental Output (q)	Price ($/q)	Total Value of Output (Eth$)
Teff	31.0	1,550	5.4	8,370	20.3	169,911
Wheat	12.7	635	5.4	3,429	18.0	61,722
Barley	22.9	1,145	6.4	7,328	10.7	78,410
Sorghum	17.7	885	14.7	13,010	14.05	182,793
Maize	15.7	785	11.9	9,342	9.35	87,343
Total	100.0	5,000	-	-	-	580,177

Source: MPP Program Loan Application to IBRD/IDA and EPID Credit files.

235. A rough distribution of the gross benefits between cultivators of different size areas and between tenants and landowners in the first nine MPP areas is given in Table 53, using the assumption that the amount of fertilizer taken by the different categories of farmers will give a good indication of how the benefits have been distributed. Here again, the distribution of the gross benefits is very similar to the distribution of land, as the larger owners and/or cultivators accounted for most of the benefits.

236. In general, landowners and/or larger cultivators constitute a larger percentage of all beneficiaries because they seem to be faster adopters of the new technologies and because it was easier for them to get the new technologies on credit. As long as they cultivate less than 20 or 25 hectares, the security requirements are less restrictive for them than for small

tenants. Since the amount of inputs a farmer gets on credit is directly proportional to the number of hectares he cultivates, the larger farmers accounted for a larger percentage of the benefits distributed among all beneficiaries because they cultivated more land.

Table 53: DISTRIBUTION OF 1971/72 GROSS BENEFITS IN NINE MPP AREAS BY TENANCY AND AREA CULTIVATED

Farmer Classification	Beneficiaries Number	%	Fertilizer taken Quintals	%	Benefits Eth$	%
By tenancy						
Tenants	507	21.8	1,627.75	32.55	188,848	33.0
Landowners	1,819	78.2	3,373.24	67.45	391,329	67.0
Total	2,326	100.0	5,000.99	100.0	580,177	100.0
By area cultivated						
0-4.9 ha.	1,325	57.0	1,573.62	31.5	182,756	31.0
5-9.9 ha.	600	25.8	1,604.35	32.0	185,656	32.0
10-14.5 ha.	233	10.0	830.02	16.6	96,309	17.0
Above 15	168	7.2	993.00	19.9	103,406	20.0
Total	2,326	100.0	5,000.99	100.0	580,177	100.0

Source: Compiled from MPID Credit files and MPP Program Loan Application to IBRD/IDA, July 1972.

237. There is very little the projects can do by themselves to alleviate the income distribution problem, since it is deeply entrenched in the country's feudalistic land-tenure system. The projects, particularly CADU, have been exposing the system's weaknesses more vividly, and they are pressuring responsible agencies for improvement. However, nothing significant has been forthcoming. A revealing weakness of the system is the fact that neither the tax assessments nor the tax collections have changed in areas covered by the package projects even though incomes have definitely increased (Table 54). For example, an incremental income of about Eth$4 million in 1970/71, within the CADU project are alone, has escaped taxation altogether (Appendix VI).

Indirect Benefits and Effects of the Projects

238. No study has been made so far of the indirect benefits or spin-off effects of any of the projects. The study is too early for the MPP, and probably for the other projects too. However, even preliminary analyses could give some insights as to what to expect and may even suggest necessary changes in the on-going projects and improve the planning of new programs. For example, analysis of CADU's credit program led to the modification of CADU's lending policies as well as enabling the MPP to plan its credit program more carefully.

239. It would be worthwhile to look at some of the more vivid indirect effects of these projects, particularly CADU. A consumption survey has recently been completed in a small area within CADU where it is believed CADU had its strongest impact.1/ A preliminary analysis of the study indicates that food consumption in general has increased and more protein and meat products are being consumed now than in the past. The study also indicates that people are now buying more luxury items such as clothes and shoes.

240. Interviews with CADU staff, local officials and area farmers indicate that more children are now going to school, there are more corrugated roofs within the CADU area and the local population has started demanding more schools, more roads and more public services. People are also believed to be travelling more to urban centers such as Addis Ababa and Nazret. A study done by IBRD's Education Division indicated that there is more decisive interest in agriculture among high school students in Chilalo than in any other part in Ethiopia. 2/

241. Passing through the Chilalo area right before harvest season (around late October or early November), one is struck with the dramatic first-round effects of CADU. The impact of innovations developed and distributed by CADU is quite impressive. Unfortunately, there is not enough information to enable one to trace where the substantial incremental income generated within the project area is being spent, and how. But a close scrutiny of Asella, the largest urban center in the area, seems to indicate that most of the income generated in the area is not being spent there. Of course, the number of bars has increased; two new hotels and a cinema hall have been built; and the supply of water and electricity has improved considerably since CADU came. However, none of these conveniences is serving the actual target population.

1/ The study, conducted by CADU's Planning and Evaluation Section, had not been printed when this report was being prepared.

2/ IBRD, "Post Evaluation of First Education Project in Ethiopia," February 1973.

Table 54: TAX COLLECTIONS IN CHILALO AND WOLAMO AWRAJAS, 1967/68-1970/71 (Eth$)

	Chilalo				Wolamo			
	1967/68	1968/69	1969/70	1970/71	1967/68	1968/69	1969/70	1970/71
Assessments								
Land tax /a	542,440	561,315	555,377	553,961	429,323	430,642	433,135	444,615
Agricultural income tax	903,442	903,442	785,771	803,303	418,811	411,999	411,999	305,858
Total	1,445,882	1,464,757	1,341,148	1,357,264	848,134	842,641	845,135	840,473
Collections								
Land tax /a	478,815	431,103	494,349	471,941	417,972	425,618	431,351	441,701
Agricultural income tax	715,962	343,538	660,149	658,159	397,799	387,111	395,853	383,516
Total	1,194,777	774,641	1,154,498	1,130,100	815,771	812,729	827,204	825,217

Source: Ministry of Finance, Agricultural Tax Department.

/a Includes education and health taxes.

242. A rather controversial issue is the question of tenant eviction. In 1969 and 1970 alone, an estimated 500 to 550 tenant families are believed to have been evicted in the CADU project area due to expanded mechanization (29). Given the rapid growth of mechanization throughout the country since 1965, and given the fact that the whole of Arussi accounted for only 8% of the total number of tractors registered for duty-free fuel during 1969/70 (29), it is difficult to conclude that the expansion of mechanization in Chilalo is a direct consequence of CADU. Although it cannot be stated with absolute certainty, import-tax and fuel-tax exemptions for farm machinery must have contributed to the expansion of mechanization, and consequently to tenant eviction. It is true that CADU's provision of machinery rental services during its first two years, which it abolished when the undesirable effects of tenant eviction were realized, may indeed have accelerated the tempo of mechanization initially, and hence contributed to tenant eviction. CADU's effective demonstration of the profitability of agriculture could also have had considerable impact on mechanization not only in Chilalo but throughout the country.

243. WADU may not have to worry about the effects of mechanization because the mountainous nature of the area it covers and the size of holdings are not conducive to mechanization. Some of the MPP areas may however feel the effects gradually. In this respect CADU's impact on mechanization could be looked at from a different angle. Traditional farming never created strain on the feudalistic landlord-tenant relationship, but innovations developed by projects such as CADU made farming more profitable, which resulted in tenant eviction. This focused the attention of agencies and officials concerned on the main constraint to rural development in Ethiopia: the question of land reform. Nothing substantive has so far been realized and nothing may happen under the existing regime, but at least the basic issues have been exposed by the success of the package projects. A good indication is the number of laws that are currently before the parliament, including laws to change landlord-tenant relations.

244. Similarly, WADU's experience in developing settlement schemes could provide important answers to land settlement, which is virtually the only means of creating the large numbers of new agricultural jobs needed to reduce the rapidly increasing unemployment and underemployment in both rural and urban sectors. Thus, projects like CADU and WADU should be looked upon more as research centers, probably more so in the future than in the past, rather than as economic entities whose success or failure is to be gauged by benefit/cost ratios or economic rate of return.

APPENDIX I

GENERAL CHARACTERISTICS OF THE PACKAGE PROJECT AREAS

CADU

Socio-Economic Conditions of Chilalo Awraja

1. Chilalo Awraja is situated on the eastern side of the Rift Valley, some 175 km south of Addis Ababa in Arussi Province. Chilalo, which is one of the most densely populated Awrajas in Ethiopia, covers about one million hectares and has about 400,000 inhabitants of which 45% are below 15 years of age and almost 92% are illiterate. Of the age group 7-12 years old only about 13% attend primary school, and only 2.5% of the 13-18 age-group attend secondary school. Over 90% of the working-population is engaged in agriculture. Population increase is estimated at about 2% per annum, in spite of the fact that infant mortality is almost 20%. Chilalo Awraja represents about 0.8% of Ethiopia's total area and 1.6% of the total population.

2. A big altitude difference in the awraja creates a wide range of climatic conditions. The northwest and western parts of Chilalo consists of the "Rift Valley," where the altitude is about 1,700 meters above sea level. Toward the east of this region, the level rises sharply to reach an altitude of about 2,400 meters at Asella, the provincial capital. In the eastern part of Chilalo, there are several mountains, some of which rise as high as 4,000 meters above sea level. Precipitation increases considerably with altitude. The rainy season is concentrated in the months of July, August and September, with some short rains in March and April. The period between October and March is rather dry, with some frost occuring during most of December at higher altitudes.

3. Most of the agricultural land is located on a very fertile plateau whose altitude ranges between 2,000 and 2,500 meters above sea level. The total cultivated area in the awraja in 1965 was estimated to be 150,000 hectares; and a 1971 estimate gives a figure of 190,000 hectares. The soils of the awraja are noted for their high clay content. For example, the clay content of the soils around Asella is given at about 80%. This factor combined with the uneven precipitation enhances erosion problems in the hilly parts of Chilalo. The soils are high in potassium and organic matter, but are generally deficient in phosphorus.

4. The major crops grown in Chilalo are barley, wheat and flax. Teff, the major national crop in Ethiopia, is very sparsely grown. The average cultivated farm per holding is estimated to be 2.5 ha., and some fragmentation has been observed. About 50% of the farmers are believed to be tenants most on a sharecropping basis. Recently, however, rent payments

in the form of cash are becoming prevalent as more and more tenants farming on a large scale (contract farms) are developing, replacing small tenants following traditional methods.

5. Chilalo is a good livestock region which had about 630,000 head of cattle by 1967. The average number of cattle per household for that period was 8.5, and only about 16% of the households had no cattle at that time. After the advent of fertilizer and improved seed varieties (mainly as a result of CADU) and the resultant doubling of crop yields, the trend has been for more land, including that previously used for pasture, to come under cultivation. This has contributed to a continuous decline in the number of livestock in the Awraja.

6. Settlement within the Awraja is very scattered with the exception of a small number of market villages and towns along the major road from Nazret in the north through Asella to Bekoji in the south. This road is also the only all-weather road within the area with the exception of a road on the southern escarpment that runs from Shashemene to Dodola via Kofale. Chilalo exports grain (mainly wheat and barley), oilseeds and livestock to other parts of Ethiopia; however, no industrial activity exists in the Awraja. The southern part of the Awraja, mainly in and around Munessa, is potentially rich in forest resources, and the scope for afforestation is promising in other parts.

7. A 1966 land tenure survey of Chilalo Awraja by the Ministry of Land Reform indicated that roughly 44% of the holdings are owned and about 48% is rented to tenants, with 8% of the land being partly owned and partly rented. The same survey has shown that about 44% of the landowners, owning about 33% of the total holdings, are absentee owners. Information on distribution of holdings for the Awraja is not available. However, a 1971 sample survey of the northern part of CADU has shown that about 27% of the holdings are larger than 40 ha., 9% of the holdings are less than 40 ha. but greater than 20 ha. and 64% of the holdings are less than 20 ha.

CADU's Development Districts: Topography and Rainfall

8. Asella Development District: This highland area, which borders the Rift Valley on the west, has an altitude that ranges from 2,000 to 2,400 meters. The Kulumsa crop production research station is in this zone at an altitude of 2,200 meters. This development district is favorable for several crops and is the most cultivated area in Chilalo. Precipitation in all parts of the zone exceeds 1,000 mm per year. The clay content of the soils is very high.

9. Bekoji Development District: This is also a highland area situated south of the Asella Development District. Most parts of this district have higher altitudes than those of the Asella Development District. For example, Bekoji is 2,800 meters above sea level. Accordingly, the precipitation is greater in the Asella Development District. The clay content of the soils is normally high. The western portion of this district is sparsely cultivated because it is dominated by the Munessa forest. In fact, this area has the most important forest resources in Chilalo Awraja.

10. Kofale Development District: This development district consists of the southern part of Chilalo, where there are plains at altitudes of about 2,300 meters in the southeastern part of the district and highlands at altitudes of about 2,700 meters in the southwestern part. The central plains of the district are favorable for crop and animal production. Even though the soils here have lower clay contents than those of the Asella and Bekoji Districts, they are easier to cultivate. The district is characterized by a smaller proportion of cultivated area and many cattle grazed on natural grasslands. The precipitation is about the same as in Bekoji District, with the yearly rainfall at Kofale being about 1,200 mm.

11. Dhera Development District: This area is a part of the "Rift Valley" and differs much from the other development districts with its altitude ranging between 1,000 and 1,800 meters. At an annual rainfall of 600-700 mm, it has much less precipitation than the other three districts. This is the main reason for its low agricultural output, even though the low clay content of the soils makes the area relatively easy to cultivate.

Table 1: DISTRIBUTION OF INHABITANTS AND FARMERS AMONG THE DIFFERENT DEVELOPMENT DISTRICTS, 1972

	Inhabitants		Farmers	
	No.	%	No.	%
Asella	120,000	30.0	14,000	23.0
Bekoji	104,000	26.0	18,300	30.0
Kofale	92,000	23.0	14,400	23.6
Dhera	84,000	21.0	14,300	23.4
Total	400,000	100.0	61,000	100.0

Source: Compiled from CADU Minor Research Task No. 3.

Land Distribution and Land Use

12. Land Distribution and Tenure Systems: In Chilalo there used to exist a number of tenurial systems, such as "rist-gult," "semon," "siso," "gebbar," and "macerin," which developed as the result of the integration of the different parts of the Ethiopian Empire. Lately, however, because of the changing needs of the society and incompativility of the feudal system with such change, some of the older forms have been abolished by law, leaving the "gebbar" system as the dominant form of tenure. Over 70% of the land in Chilalo that has been classified by tenure is now found under "gebbar," whose distinctive feature

is that "a person who has acquired land by purchase, grant or inheritance pays (only) land tax to the government as prescribed by law, i.e., he can sell, lease or mortgage the land. His rights in land are inheritable."(29). Thus, within this framework, the rights of private property in land are affirmed by law, making the land distribution system and tenancy relations the key factors defining the means of development. 1/

13. There are conflicting figures with respect to the proportion of landlords and tenants in Chilalo. Statistics from the office of Provincial Government give a breakdown of 57% tenants, 38% landlords and 5% settlers on government land. CADU's general agricultural survey of 1967-68 gives the proportion of tenants as 52% within the Project Area.

14. It is difficult to estimate the area under tenant cultivation, but one can safely guess that there is a high concentration of tenants in the large and medium holdings, particularly considering the extent of absentee ownership by the big landlords. A land tenure survey in 1967 has shown about 44% of all landowners, owing about 33% of the measured area in Chilalo, to be absentee owners (Table 2). The same study showed that of the total cropped area 34% was owned, 55% was rented and 11% was mixed (Table 3). The total cropped area covered in the study is, however, only 12% of the total area of Chilalo.

Table 2: ABSENTEE OWNERSHIP IN CHILALO

Type of Landowners	% of Landowners	% of Measure Area Owned
Owners or the farm	56.67	67.07
Absentee owners	43.42	32.93

Source: CSO, Land Tenure Survey of Arussi Province, 1967.

15. An analysis of the distribution of the number of cultivated holdings by tenure (Table 4) shows that 48% of the number of holdings, comprising 38% of the total cultivated area in Chilalo, is owned; and 45% of the holdings, making up 51% of the total cultivated area, is rented. A separate 1970 study of the distribution of holdings in Chilalo by the Central Statistical Office (CSO), has estimated 44% of the holdings to be less than 2 ha., 94% to be less than 5 ha. and the medium holding to be 2.3 ha. (48). Another study by Arne Lexander of CADU has estimated 35.1% of the landowners and 71.2% of the tenants in Chilalo to own 0-5 ha. (30).

1/ Land has such an important economic and social impact that about 70% of all civil cases in the Chilalo courts are land ownership conflicts (29).

Table 3: PERCENTAGE DISTRIBUTION OF TOTAL CROPPED AREA IN CHILALO BY TENURE

Type of Tenure	No. of Ha.	%	As % of Total Geographical Area
Owned	50,603	34	4.08
Rented	81,858	55	6.60
Mixed	16,372	11	1.32
Total	148,833	100	12%

Source: CSO, Land Tenure Survey of Arussi Province, 1967.

Table 4: CULTIVATED AREA IN CHILALO BY TENURE

Type of Tenure	No. of Holdings		Cultivated Area		Average Holding
	No.	%	ha.	%	(ha.)
Owned	55,488	48	84,879	38	1.53
Rented	52,020	45	114,178	51	2.19
Mixed	8,092	7	25,542	11	3.16
Total	115,500	100	224,599	100	1.94

Source: McArthur, Some Aspects of Land Policies in Ethiopia, 1971.

16. Landlord-Tenant Relations: Even though no exhaustive study of tenancy relations has ever been undertaken, it is agreed that the most prevalent sharecropping systems in Chilalo are the "Ekul" and the "Siso" where the tenant pays one-half and one-third of his harvest to the landlord, respectively. Recently, however, the "ekul" system is becoming more common due to the stiff competition the traditional tenants are facing from big contract farmers, as is evident from the increase in the price of land from about $600/ha. in 1968 $800/ha. in 1970 (29).

17. In addition to the rent, tithe is paid to landlords, and personal services in the form of free labor are rendered. Most tenancy agreements are oral, and there is a total absence of either traditional or legal security of tenure for most tenants. The landlord has the right and power to evict his tenants at will.

18. Land Use in Chilalo: Most of the highland area of Chilalo is used mainly for crop production even though a large amount of livestock is also found. The lowlands are potentially suitable for livestock production. Since 1967 there has been a general tendency to increase crop area at the expense of grazing areas. Table 5 shows that cultivation of all major crops has increased significantly. In the meantime, the number of cattle has decreased from 3.1 per farmer in 1967 to about 2.7 in 1971 (15).

Table 5: COMPARISON OF AREAS IN DIFFERENT CROPS BETWEEN 1967 AND 1971

Crop	1967		1971	
	Area (ha.)	%	Area (ha.)	%
Barley	68,000	51.9	79,300	40.5
Wheat	24,000	18.3	51,000	26.0
Flax	19,000	14.5	25,300	12.7
Peas	8,960	6.8	6,400	3.2
Corn	4,900	3.7	17,700	9.0
Beans	3,900	3.0	7,800	4.0
Teff	1,500	1.2	7,600	3.9
Sorghum	610	0.5	--	-
Lentils	88	0.1	-	-
Rape	-	-	700	0.4
Total	130,958	100.0	195,800	99.9

Source: Crop Sampling, 1967, and Minor Research Task No. 6.

WADU

Socio-Economic Conditions of Wolamo Awraja

19. Wolamo Awraja, a sub-province of Sidamo Province, lies on the north-west edge of the Rift Valley. It has an area of about 3,178 sq km and a population of about 543,000. A 1960 census gave the average size of a household as 4.9 (45), but the preparation mission survey suggested the much higher figure of 7.9. The effective labor force is, however, estimated to be around four per household. Wolamo Awraja is the home of the distinct and fairly homogeneous ethnic group, the Wolamos, who share a common language, Wolaminya.

20. The original home of the Wolamos was around Kindo mountain, and much of the present Awraja was sparsely occupied by semi-nomadic people of Galla and Dambata origin (62). About 200 years ago, the Wolamos started to spread into the highland areas of what is now Soddo, Bolosso, and Damot Galla Woredas (62). The Wolamos were basically agriculturists concerned only with the production of crops, but they inter-mixed to some extent with the Gallas and Dambatas (whom they pushed out of the highlands) and took away their livestock. Together with the livestock they captured, they adopted the cattle breeding tradition of their captives, and the number of livestock owned became an important prestige factor. Nevertheless, the amount of livestock in Wolamo is less than in Chilalo.

21. The Wolamos are a rather unique ethnic group of southern Ethiopia in that they are socially cohesive and traditionally familiar with group action and organizations. Only in some northern areas of Ethiopia, where the village system is prevalent and communal ownership of land is common, can one find group actions and organizations similar to those of the Wolamos. The Wolamos are probably more industrious than any other ethnic group in Ethiopia, but low nutritional and health standards limit their working capacity. Their diet is low in protein, high in carbohydrates and subject to wide seasonal variations.

The Highlands and the Settlements: Topography and Rainfall

22. The Highlands: The topography of the highlands is characterized by steep hillsides and gently rolling plateaus at altitudes ranging from 1,500 to 3,000 meters above sea level. This part of the project area, which covers Soddo and Bolosso Woredas, has a population of about 236,000 with a density of 160-275 people per sq km (45).

23. The rainfall, which comes during two distinct periods, April-May and July-October, is reliable and adequate at an annual average of 1400 mm. Rainy days average 132 per year (45). Although this area lies in the tropics (7°N), the altitude limits the temperature to a maximum of about 30° C. The biomodal pattern of the rainfall allows double cropping, usually teff after maize.

24. The Settlements: The topography of the settlement areas in the savanna is characterized by flat plains at altitudes ranging from 1,100 to 1,500 meters above sea level. Its area comprises some 20% of the total area of Wolamo Awraja. These settlement areas, at Abella and Bele, originally contained 590 and 110 farming settlers. Thus most of the area is uninhabited, as indicated by the population density of only 31 people per square km (45). It is one of WADU's aims to expand the number of farms to a total of 1,750, which will provide homes and livelihood for almost 10,000 people.

25. The annual mean rainfall for the area is around 800 mm. Day time temperatures are above 40°C. most of the time. Local weather records suggest that both the amount and distribution of rainfall are unreliable. With proper cultural practices, the climate is suitable for maize, cotton, and chilies, but not for coffee, wheat or barley. Allowance must be made, however, for periods of reduction in yields due to poor rainfall.

Land Use and Land Tenure

26. The land tenure system in the project highlands is exceedingly complex but is typical of many parts of Ethiopia. The present structure of land ownership and tenure can be traced back to the feudal system. In Wolamo as in [illegible], privately owned land is inheritable and may be sold, leased or mortgaged. In the past, the Government used to grant rights of use to its army members and other employees in lieu of salaries or pensions. Such rights were not inheritable or assignable. However, right holders have been able to obtain full private ownership of up to 40 ha. by payment of a fee (45).

27. There is little, if any, cultivable Government land remaining in the highlands. The WADU preparation mission from the World Bank found the usefully cultivable land to be owned by about 3,000 people, with a few major landlords (14% of all landowners) owning about 60% of the land (45). Over 50% of the landowners in Soddo have more than one parcel of land and over 30% of them have adult sons working on their land (48). As can be seen from Table 6, 45% of the landowners have tenants, and in the less densely populated Bolosso Woreda 25% of the landowners have tenants. Within both Woredas there are about 17,000 farming families (comprising roughly 25% of the total farming population in the whole of Wolamo Awraja) who own no land at all and are tenants only (45). However, the holdings of about half of all landowners are too small for subsistence, forcing them to rent additional land from the big landlords. Only 4% of the project area population are neither owners nor renters (48).

28. The average holding size was estimated by the preparation mission to be 1.5 ha., including both arable and fallow land. This average is misleading, however, because 87% of all holdings are below that size, with a median holding of about 0.5 ha. (45). Areas under annual crops average only 0.25 ha. in Soddo and 0.42 in Bolosso. The average holdings for landlords is about 2.0 ha. and that for tenants only 0.5 ha. As indicated in

Table 7, the averages conceal the skewed distribution of ownership. Almost no tenants have holdings greater than 1.6 ha., compared to 20% of the landlords. Most farmers have two or more parcels.

Table 6: PERCENTAGE DISTRIBUTION OF LANDOWNERS GIVING PART OF THEIR LAND TO TENANTS IN THE HIGHLAND PART OF WADU

Woredas	% of Landowners with Tenants	% of Landowners without Tenants
Soddo	45	55
Bolosso	25	75

Source: Compiled from IBRD's Appraisal Report of WADU and CSO.

Table 7: PERCENTAGE DISTRIBUTION OF HOLDINGS BY TENANCY

Size of Holding	% of Owners	% of Tenants	% of all Farmers
Less than 0.3 ha.	28	56	40
Less than 0.6 ha.	46	80	63
Less than 1.6 ha.	80	98	87
More than 1.6 ha.	20	2	13

Source: Compiled from IBRD Appraisal Mission Report on WADU.

29. In general, even though the structure of the landlord-tenant relationships in Wolamo and Chilalo are very similar, one can see distinct differences. Holdings greater than 40 ha. are prevalent in Chilalo whereas a holding greater than 5 ha. is a rarity in Wolamo. Thus, the introduction of mechanization and the consequent eviction of tenants is very unlikely to occur in Wolamo, contrary to events in Chilalo.

30. Land Use in the Highlands: Even though about 85% of the land in the highlands is utilized in some way, only 20-25% is under annual crops (48). Due to differences in altitude, temperature and population pressure, different cropping patterns are found in the two highland Woredas within the

WADU project area. However, the land-use pattern of the project area as a whole shows a modest percentage of cropped are (Table 8) with the small landowners or tenants devoting about 75-80% of their land to subsistence crops such as enset, maize and sweet potatoes (62). Intercropping and double cropping are common.

Table 8: PERCENTAGE DISTRIBUTION OF LAND USE IN THE HIGHLANDS WITHIN THE PROJECT AREA

Land Use	Soddo Woreda (%)	Bolosso Woreda (%)
Crops		
Coffee	2	1
Cereals	9	21
Beans	0	2
Other food crops	4	4
Forest and wood lots	76	68
Pasture and fallow	9	4
Total	100	100

Source: WADU Appraisal Report.

31. Wheat and teff are grown at higher altitudes, but even at lower altitudes one finds tiny plots of teff. About 50% of the farmers in Soddo and 15% in Bolosso grow wheat, even though a large proportion of the production comes from a few large fields of the major landlords (63). Production of oriental tobacco was introduced by the tobacco monopoly of Ethiopia in 1966. By issuing seedlings to farmers free of charge, the monopoly was able to induce about 11,000 farmers to grow tobacco by 1968 (45).

32. Livestock: Livestock plays an important role in the farming system of Wolamo, though not as much as in Chilalo. A survey by the preparation mission found an overall average for the area of 4.5 livestock units per farm, i.e., 1.2 oxen, 2.5 cows, 1.8 calves, 1.0 goats and/or sheep and 0.25 horses and/or mules per family (45). It also found that the number of livestock owned increases with the amount of land owned. There are no common grazing areas in the highlands and farmers have to either set aside land for pasture, rent grazing, buy feed or drive the cattle to the savanna for grazing. According to the preparation mission survey in 1968, about 30% of the highland farmers had no cattle at all, 28% had only one ox or cow, and over 40% hire or borrow oxen for ploughing (45).

33. The cash income contribution of livestock is rather significant. Farmers usually earn cash by selling their dry cows or old oxen. The average cash income from livestock is estimated to be about Eth$375.00 per year with over 70% of it coming from the sale of beef.

34. Land Tenure in the Settlements: Most of the land in the savanna, which comprises about 20% of the total area of Wolamo Awraja, belongs to the Government. Prior to the WADU Settlement Program, most of the zone was uninhabited and was used as relief grazing during the cropping season in the highlands as well as being grazed by nomadic herds. Until the campaign by the Malaria Eradication Service, the presence of malaria inhibited permanent settlement in the savanna. Even after malaria was eradicated, the WADU settlement scheme was faced with problems probably due to highlanders' strong preference for their traditional homeland, social circles and well-known crops.

35. Settlers are selected by a sub-committee of the Wolamo Development Committee which includes representatives of local communities, ministries and the project. About 75% of settlers come from the highlanders of Wolamo Awraja and 25% from other parts of Ethiopia. Settlers must be between 16 and 45 years old and physically fit. They are required to live on their holdings and give up all claims to other land.

36. The original plan was to give all settlers ownership of their 6-ha. holding after a four-year probationary period, by which time they will start to make development tax payments amounting to Eth$58 per year for twenty years and pledge their land title as security for outstanding loans. The terms of the title, were acceptable to IDA, included provisions prohibiting sub-division of holdings and requiring settlers to follow cropping patterns and soil conservation works approved by the project. The Ethiopian Government found this plan unacceptable with the excuses that it is impossible to issue freehold titles according to the Ethiopian Civil Code of 1960. As a substitute for the conditional freehold title, the project suggested and drafted a long-term lease what was accepted by the IDA. The Ethiopian Government has nominally accepted the suggestion, but nothing has been done yet towards approving the drafted long-term lease agreement. Even licenses to cultivate are not yet issued to settlers.

37. Land Use in the Settlements: Subject to modification in the light of new experience, the standard cropping pattern designed by WADU is:

Maize	1.8 ha.
Cotton	1.0 ha.
Chilies	0.2 ha.
Grazing	2.0 ha.
Permanent grass, waterways, roads, etc.	1.0 ha.
Total	6.0 ha.

38. Maize is meant for subsistence, and cotton and chillies for sale as a source of cash income. The project requires that at least during the pro-

bationary period, settlers adopt a cropping pattern that ensures the best possible balance between family and hired labor.

BACKGROUND OF THE HIGHLANDS TO BE COVERED BY THE MPP

39. Over 90% of Ethiopia's estimated 25 million people live in rural areas, of which 85% live in the highlands to be covered by the MPP Program. Ten of the fourteen provinces in the country already have MPP areas, and all fourteen provinces have at least Observation Areas. Even though the area to be covered by the MPP Program constitutes less than half of the country, it involves the entire rural population, excluding the nomadic tribes.

40. Only an estimated 10 to 15% of the land in Ethiopia is under crops. About 35% of the land is not suitable for either plant or livestock production, and the rest is used for grazing or taken up by open forests and brush.

41. The central highlands, where the MPP Project is concentrating its initial extension efforts, are under intensive cultivation by mainly subsistence farmers. Seventy percent of the cropped area in the highlands is under cereals, with the rest under pulses and oilseeds (42). Of the cereals, teff is the most widely grown, followed by barley, sorghum, maize and wheat. About 50% of all highland farmers are estimated to be tenants, half of whom cultivate land owned by absentee landlords (51). This pattern mainly applies to the southern provinces, however, because communal ownership of land is prevalent in most of the northern provinces.

42. The highlands have been farmed with increasing intensity for thousands of years in order to support the ever-increasing number of people and livestock. Such pressure on the land has resulted in almost total removal of tree cover and degradation of the soil structure in most of the highlands (including some extremely steep slopes) and continuous declines in crop yields and livestock productivity. The predominant soils in the highlands are reddish-brown clays and clay loams in both the southern and northern regions, and gray and black clay soils in the flat plateaus. The black clays are believed to be high in plant nutrients but have poor internal drainage, limiting their cropping potential. The reddish-brown clay loams were initially fertile, but are presently highly eroded and their nutrients leached out in most places.

43. The highlands are classified into three ecological zones. The northern highlands, which are the driest with annual rainfall ranging between 600 mm. to 800 mm., have problems of frequent water shortages and soil erosion (39). The central and southern highlands have very heterogeneous topography, which ranges from flat plateaus to rocky terrain. Rainfall in this zone averages 800 mm. to 1,400 mm. per annum. The third ecological zone lies along the western highlands, which is potentially the best agricultural region in the country. Between the large rolling plateaus of the western zone are found several river gorges, and the rainfall in the area averages over 1,400 mm. per annum (39).

Agricultural Tenancy

44. There are three broad categories of land ownership in Ethiopia: individually owned lands, communally owned lands, and Government lands.

45. Individually Owned Lands: These include land owned by the Ethiopian Orthodox Church which are estimated to be not less than 25% of the total holdings in Ethiopia (51). Individual ownership is widespread in the Southern provinces. No restriction of any kind is imposed, and land can be freely transferred, mortgaged, inherited or leased. Ownership of this category is highly concentrated in the hands of a small landed class and the Church. To complicate the issue, there is no system of registering titles or deeds.

46. If the northern provinces, which are communal areas, are disregarded, about 50% of the farming areas in the rest of the highlands are farmed by tenants. This has been revealed by a land tenure survey which showed tenants to be 51% of the farmers in Shoa Province, 45% in Arussi Province, 54% in Wollega Province, 43% in Gemu-Cofa Province, 37% in Gidamo Province, 59% in Kaffa Province, and 73% in Illubabor Province (51). The same study indicated that about 80% of the tenants in Arussi, 90% in Shoa, and 40% of the tenants in Wollega to be sharecroppers (51). In addition to the regular payments of a share of the crop as rent, tithe payment is a precondition in tenancy arrangements in most areas. Furthermore, tenants are usually required to render personal services to their landlords in the form of free labor on the farm at least during planting and harvest.

47. A problem which is closely related to the extent of sharecropping is the question of shares payable on rental rates. The land tenure survey revealed that tenants pay one-fourth to two-thirds of their crops to the landlords (50). It should be further noted that all variable inputs such as oxen and seeds are usually paid for by the tenants, with the landlords' contribution being only the land. Security of tenure is inadequate as is clearly indicated by the uncontrolled rentals, unwritten and uncertain lease agreements, unconditional evictions, uncompensated improvements, and undue advantages taken by some landlords. Such tenancy relations neither offer the incentive to improve farming methods nor encourage undertaking additional investments on the farm by the tenant, and are probably the major cause for the stagnated, low-level productivity in Ethiopian agriculture.

48. Communal Ownership of Land: Most of the land in the northern provinces is communally owned. Land is subdivided between different villages or groups of families, with each member of a family or a village given limited rights on his holding. Each holder is allowed the exclusive use of the land and the right to lease it. However, even though such land rights are heritable, outright transfers, by sale or gift, and mortgages are not allowed.

Government Lands

49. The Government is at least a nominal owner of most of the unused land in the country. Land appears to have come into the hands of the Government through three different methods. First, a lot of land in the southern provinces to which individuals or groups laid claim was seized by the Government after the Menelok conquest still remains under its ownership. A second source was the possession of land that was privately owned but on which the owner failed to pay his land tax for so long that the ownership reverted to the Government. The third source was simply the annexation of land that did not appear to be in use or owned by any other party.

50. Thus, quite extensive areas of Government-owned land are known to exist throughout the peripheral areas of the country, especially the southern provinces. Because of the system of recording that has been used and the poor state of many of the records of patronage grants made from Government land, it is difficult to identify with certainty all of these lands.

51. The ownership of some of the land that the Government claims is disputed by some powerful private individuals or groups of people (51), making a definition of Government land difficult to apply in practice.

Size of Holdings

52. With almost 19 million rural dwellers depending primarily upon crop production for their livelihood (48), and with only 13 million hectares of the estimated total of 122 million hectares in the nation being cultivated (.8), just under 0.7 hectares of cropped and fallow land is available per rural resident. Most of the family holdings, whether owned communally or operated by tenants or owners, are less than 2 hectares. The first Round National Sample Surveys by CSO suggested that in the four highland provinces of Shoa, Tigre, Arussi and Gojjam, which together account for about 35% of the rural population, average cropped land per family holding in 1968 was 1.7, 1.3, 1.9 and 1.2 hectares, respectively (2). In Tigre more than two-thirds of the holdings were estimated to be less than 1.0 hectares; in Shoa about one-half of the holdings were less than 1.0 hectares, and in Arussi about one-third were found to be less than 1.0 hectares (50). Even less favorable land/man ratios prevail in Wolamo Awraja (Sidamo Province), as was pointed out in the WADU report.

53. In areas where ownership is communal, most farmers cultivate less than 1 hectare, and a substantial proportion of the households are landless (41). The usual procedure of providing land for new allottees is by re-dividing lands allotted to others in the past. This has led to extreme fragmentation of holdings, which, if not consolidated, are believed to be too small to be profitably operated. Nonetheless, the consolidation of holdings is not an easy reform to carry through.

54. Most national policy statements emphasize the need for some kind of tenurial change, but the Ethiopian Parliament has been very reluctant to pass the bills that attempt it. There is currently a draft bill before Parliament which provides for the sharing of operating costs between tenants and landlords, improved security of tenancy including at least two years' notice before eviction, limited rentals to half if the landlord shares operating costs or one-third otherwise and compensation for permanent improvements by the tenant when being evicted, among other things. The possible passage of this bill has aroused much optimism, but many experts at the Ministry of Land Reform feel that, even if it passes, its loopholes will prevent its effective implementation.

APPENDIX II

ORGANIZATIONAL AND ADMINISTRATIVE STRUCTURE OF THE PROJECTS

1. All three projects - CADU, WADU and the MPP - were initiated as the result of a national rural development strategy which was later adopted in the third Five-Year Development Plan. According to the Plan, the activities of any forthcoming package project were to be carried out within the framework of a regional development organization which was to be directed by a National Rural Development Board (NRDB).

2. There was no National Rural Development Board formed by the time CADU, WADU and the MPP started operating fully as autonomous units within the Ministry of Agriculture. Within the framework of their respective plans of operation, the Ministry of Agriculture together with SIDA in the case of CADU and MPP, and IDA in the case of WADU, decide on the annual work programs and budgets. Important modifications of the work programs or budgets have to be approved by the Ministry of Agriculture and the donor agencies. But the direct management of the projects' activities are left entirely in the hands of the respective project directors.

3. When the idea of the MPP started gaining acceptance it was felt necessary to have a department within the Ministry of Agriculture that could be charged with the overall supervision of the MPP's as well as the comprehensive projects (CADU, WADU, etc.) and projects aimed at the development of commercial farming, such as the Humera Agricultural Development Project. The Extension and Project Implementation Department (EPID) was established to perform these functions.

4. An inter-ministerial committee, chaired by the Minister of Agriculture, was formed to act as liaison with the central government and to coordinate the activities of EPID with other activities being undertaken by the government. To deal with specific issues, working groups or special committees on department levels were formed, in which organizations such as the AID Bank, the Institute of Agricultural Research and the Livestock and Meat Board are included.

Internal Organization and Administration of CADU

5. As can be seen from figures 3 and 4 in Appendix VII, there has been some reorganization within CADU. These changes will be pointed out in the course of the different divisions. It should be noted that the format presents a hierarchial set-up of the departments and sections, all of which operate within the common framework of an established work schedule and budget.

6. Project Direction: The Executive Director's office controls the project's overall activities. The different departments and sections will be described by relating their specific tasks to the overall objectives of the project.

7. Planning and Evaluation Section: The Planning and Evaluation Section is responsible for periodic evaluation of the entire organization, ensuring the efficiency of the various units of the organization, suggesting ways of improving project-goal attainment, advising the various divisions and sections on survey designs, identifying and conducting feasibility studies on potential activities and projects, collecting statistical data that will be used in evaluating the project's effects and developing a methodology for facilitating evaluation feedback to the project management.

8. Experimentation Department: The Experimentation Department consists of the Crop and Pasture Section, the Agricultural Engineering Section, the Animal Husbandry and Breeding Section, and the Forestry Section. The Crop and Pasture Section is involved in finding new crops and varieties suitable for the area, establishing methods for pasture improvement, determining optimal growing conditions for different crop and pasture varieties, acquiring more knowledge of soil conditions and determining possibilities for drainage and erosion control.

9. The Agricultural Engineering Section (formerly the Implement Research Section) attempts to develop tools for soil preparation and crop handling and transport, learn how more mechanized operations can be profitably employed and train local artisans in the production and maintenance of new equipment.

10. The Animal Production Department was reorgnized to form the Animal Husbandry and Breeding Section and the Veterinary Department. Its responsibility is to establish optimal breeding and management methods for dairy cattle, sheep and poultry and to train extension staff in the newly developed methods. Breeding activities on a commercial basis have recently been transferred to the Gobe Cattle Breeding Division.

11. The forestry section aims at finding suitable tree species for different ecological zones, establishing plantation and nursery management techniques, initiating reforestation programs (particularly for fuel, construction and erosion control purposes), establishing timber plantations on government lands (particularly in Munessa and Asassa) and training extension staff in forestry management.

12. Veterinary Department: The Veterinary Department aims at increasing the knowledge of prevailing livestock diseases and their suppression through preventive services, increasing the production of crossbred cattle through artificial insemination, producing semen from crossbred bulls, creating a cadre of inseminators and vaccinators and training extension staff in milk hygiene and veterinary fundamentals.

13. Extension and Training Department: The department is made up of the development district extensions sections, the Training Center, the Information Section, the Women's Extension Unit and the Cooperative Extension Section. Extension units in the development districts promote adoption of new techniques through an annual analysis of demonstration results, advise and assist farmers on credit applications and prepare for the expansion of the projects' geographic coverage.

14. The Women's Extension Unit aims at increasing the general concept of development among women in the project areas, training women in basic home economics and establishing women's groups. The Women's Extension Unit is currently temporarily suspended, pending an evaluation of its performance so far. The Cooperative Extension Unit, whose goal is the creation of cooperative societies that will eventually take over the marketing supply, procurement and credit functions, is currently idle due to staff shortage. However, training of cooperative organizers is done within the Training Center.

15. The responsibilities of the Training Center are the selection of groups to be given special training to serve different sections of the project, the training of project staff and training staff for other projects, mainly EPID. The Information Section is designed to increase the knowledge of development programs and project objectives and achievements to disseminate information about CADU activities and about legislation pertinent to project goals and to promote self-help schemes such as water and educational projects.

16. Infrastructure Department: The Infrastructure Department consists of the Water Development, Construction Services, Building and Road Sections. The Water Development Section aims at organizing self-help schemes for water supply, creating water-supply facilities in accordance with a master plan on request from the local population, aiding in long-term loans for this purpose, overseeing local cost contributions and researching hydrological conditions in the area.

17. The Construction Services Section is designed to help other sections with planning, land surveys and technical control. The Building Section is responsible for the maintenance of buildings and the project center facilities as well as supervision of new building. The Road Section maintains and repairs existing project roads as well as building new feeder roads on the basis of priorities set through feasibility studies.

18. Common Services Department: The Administrative Section, the Carpool, Maintenance and Store Section and the Catering Section make up the Common Services Department. Controlling the use of all funds and property, maintaining adequate records and documents, submitting budget follow-ups, participating in the preparation of annual work programs and budgets and participating in staff management are the functions of the Administrative Section. Operation of the carpool, water works, central stores and workshops is the duty of the Carpool, Maintenance and Store Section; provision of laundry services, food and accommodation for CADU staff is that of the Catering Section.

19. Marketing Division: The Marketing Division, whose aim is to procure inputs on credit and market output as well as to establish new trade centers that facilitate its credit and marketing activities, is one of the newly formed autonomous units within CADU. It was formerly known as the Commerce and Industry Department.

20. The Seed Division: The Seed Division, which was part of the Crop Production Department, has recently been made an autonomous unit within CADU. Its sole aims are the production of improved seed varieties for sale and financial self-sufficiency in its operation.

21. Cattle Breeding Division: The Cattle Breeding Division, which used to be part of the Livestock Division, is the third autonomous division within CADU. Its main goal is the production and sale of grade cattle in order to expand milk production within the project area.

Internal Organization and Administration of WADU

22. WADU's proposed aims, organizational methods and financial procedures were modelled on those of CADU. As depicted on figures 5, 6 and 7 in Appendix VII, WADU has also undergone some reorganization. Due note will be given to these changes.

23. Project Directions: All major sections of WADU are supervised by section chiefs, and the Project Director is responsible for all sections as an overall overseer, administrator and organizer of the project. The Project Director is to be assisted by a deputy who has to be an Ethiopian (this position is vacant at the moment). In contrast, CADU's Project Director has two deputies; one Ethiopian and one expatriate. In order to facilitate the activities of Project Direction, the Planning Unit, the Legal Section, the Land Reform Section and the Administrative and Personnel Section were initiated after the project started operating fully.

24. The Planning Unit: There was no planning unit built into the project when it was initiated, which probably accounts for the poverty of statistical data for WADU as compared to CADU. When the need for basic socio-economic studies and careful reports on past performance was felt by IDA and WADU's Project Direction in 1971, a planning unit was established.

25. The Planning Unit has only one permanent staff member who holds a B.A. degree from Haile Selassie University, compared to CADU's unit that has five expatriate staff with M.S. or Ph.D degrees and three Ethiopians with B.A. or M.S. degrees. It has so far been limited to conducting one agricultural survey of the project and surrounding areas and helping in the preparation of annual reports.

26. The Legal Section: This section handles all legal matters that involve the project. It prepares standard contract forms for legal transactions such as contracts of employment, loans, sales and purchases.

27. Land Reform Section: This section was set up in order to follow the day-to-day activities of the project with respect to land tenure, mainly because WADU deals with unclearly identified and demarcated government lands, some of which also contain pockets of patronage grants that have further complicated the problem. WADU requested the Ministry of Land Reform to post a qualified land-reform officer in the Awraja who would work in close cooperation with them so that its proposed settlement and consolidation programs could proceed

smoothly. Even though the request has been accepted in principle by the Ministry, posting of the staff has so far been delayed.

28. The Land Reform Section is also responsible for drafting lease agreements for the settlement schemes, both the lease for the four-year preliminary period and the long-term lease afterwards. However, the section has been non-functional so far: no leases have been drafted and by October 1972 the settlers still did not know their specific rights and obligations.

29. Administrative and Personnel Section: This section was primarily formed to provide administrative services to all branches of the project and to recruit all project staff below the level of Section Chief. WADU had failed to recruit a full-time administrator by July 1972, which probably was a major cause in creating confusion in staff relations.

30. Development Division: Land Planning Section. This section was originally intended to plan new settlements comprehensively and to modify existing holdings to conform to the overall plan of the project. The idea of consolidating holdings in the highlands has now been dropped, and the principal current functions of the section include land surveys in all development centers, establishment of defined boundaries, organization of cadestral maps, selection of sites for erosion control and improvement of water supply and selection of experimental sites and areas for roads.

31. Road Water Supply and Conservation sections. The major functions of these sections are the clearing of land for settlement purposes and the construction of roads. It also undertakes soil conservation and flood control measures as well as work on water-supply problems.

32. Extension Section. This section has divided the entire project area into four parts, two in the highlands and one each in the settlements. Through these four extension units, each headed by a senior agent who is a Jimma or Ambo graduate with several years experience, the section tries to promote adoption of new techniques through demonstrations and advice and assists farmers with credit applications.

33. Livestock and Veterinary Section. This section selects model farmers for raising up-graded dairy cows in collaboration with the Extension Section, plants fodder crops, collects and sells hides, undertakes surveys of animal diseases and constructs hide-drying sheds in collaboration with WADU's MCC Division and the Livestock and Meat Board. Together with the Training and Trials Division it builds demonstration poultry houses, dairy cattle sheds, feedlots and paddocks at the Training Center in Soddo.

34. Home Economics Section. This section undertakes surveys of the food habits of project-area population and offers courses on basic home economics to project-area women. It also administers the World Food Program in the area.

35. Training and Trials Division: Training Section. The Training Section trains its own field staff, farmers' committees and selected farmers through broadcasting agricultural advice over the radio, offering courses at WADU's Training Center and demonstrations in the field.

36. Trials Section. This section undertakes fertilizer and variety trials of various crops and tests the impact of new cultural practices on yields. It also works on pest control measures, mainly with cotton.

37. Dairy Farm Section. This section works on pasture management, control of external livestock parasites and ways to lower calf mortality in the area. It also promotes the improvement of local dairy cattle by providing up-graded bulls for breeding.

38. Crop Farm Section. This section buys seeds to be distributed to farmers. The Soddo farm produces maize as well as silage for WADU's dairy cattle, the Areka farm produces teff and wheat and the Abella farm produces beans.

39. Crop Protection Section. This section works on finding effective pest control measures in the settlement areas, conducts chemical spraying trials on cotton and trains extension staff in disease and pest control measures. It also carries out experiments on different kinds of crop storage methods.

40. Marketing, Credit and Cooperative Division: This Division promotes the establishment of cooperative societies. It performs its credit and marketing activities through group marketing organizations that are structurally similar to cooperative societies but that allow WADU to retain complete control until independent registered cooperatives are ready to take over. It also runs coffee-processing factories in the highlands.

41. Works and Services Divisions: The Building Section is responsible for all building activities of the project, such as staff residences, recreation centers and offices; the Brick Factory produces bricks, cement and pipes for use by the Building Section; the WADU Club provides food and recreation for the staff; and the Workshop Section is responsible for carpool, transport and related services.

Internal Organization and Administration of the MPP

42. Since the MPP Program relies heavily on methods developed by the comprehensive projects, mainly CADU, EPID's organizational and administrative set-up was designed to have close ties with all comprehensive projects. However, its wider geographical coverage necessitated a different administrative set-up than that of the comprehensive projects (see Figure 2 in Appendix VII).

43. EPID's Headquarters Organization: Department Heads. The heads of departments are responsible for planning the work and budget, submitting progress reports including an annual report, supervising and coordinating the work, discussing support from foreign agencies, coordinating with other

departments of the Ministry of Agriculture as well as with other agencies, and supervising staff, including hiring and dismissing contract staff.

44. At the moment the head of the Department is aided by two deputy heads, one Ethiopian and one expatriate(the director of the Minimum Package Project). A Planning and Evaluation Unit has recently been established whose three distinct functions will be evaluation of the performance of the various projects and programs comprising EPID, planning for new projects and programs and performing a variety of economic analyses.

45. Liaison Division. This division is responsible for EPID's supervisory work on the comprehensive projects. For coordination of activities between EPID, the comprehensive projects and other independent projects, a Liaison Committee for the package projects is to be established. This Liaison Committee will consist of the heads or managing directors of the different projects. The Liaison Division will serve as secretariat to the Ministerial Committee and will be responsible for coordination with road authorities.

46. Extension Division. Within EPID the main burden of implementing the MPP Program is carried by the Extension Division. It is in charge of surveying new areas to be included in the project and of supervising observation, demonstration and training activities in the project areas. The Extension Division consists of the Agronomic Group, the Credit and Marketing Group, the Animal Husbandry Group, the Cooperative Promotion Group, the Training Group and the Home Economics Group.

47. The Agronomic Group provides technical advice to and supervision of the Minimum Package Projects and the other areas of extension efforts with respect to agronomic problems. It participates in the planning of new or expanded projects and takes part in the research and educational coordination tasks. It is also active in staff training. Upon request, it is required to serve comprehensive projects and commercial farming enterprises when time is available.

48. The Marketing and Credit Group is concerned only with the Demonstration Areas and the MPP areas. Its main duty is to organize and supervise the supply of inputs and credit activities performed by the project through marketing centers established in each extension agent area. The group is also involved in staff training in credit and marketing.

49. The Animal Husbandry Group will supervise pilot animal husbandry activities in selected areas, training of staff and preparation for future expansion. It is not functioning to date (November 1972).

50. The Cooperative Promotion Group is responsible for the promotion, establishment and supervision of producer cooperatives to be developed out of the Marketing Centers. The group is also involved in staff training as well as training of the cooperative society board members.

51. The Home Economics Group will be responsible for pilot activities in the field of home economics, training of staff and preparation for future expansion. The content of the work program will be determined by a feasibility study to be started very soon.

52. Common Services Division. This division handles accounting (internal as well as MPP credit accounting), procurement, recruitment and staff management, payments, internal control and legal questions, and participates in the compilation of the annual work program and budget of EPID. The division is responsible for the secretarial and transport services for the headquarters.

53. EPID's Field Organization: As was noted above, extension activities are carried on in three types of areas: Observation Areas (OA), Demonstration Areas (DA) and Minimum Package Projects (MPP), which are consecutive steps in the development program of an area. After the decision is made to provide an area with extension activities, it is designated as an OA and one extension agent is assigned to undertake production trials and a general survey of the area. The agent works under a direct supervision of the Agronomic Group from the Extension Division of EPID and gets assistance from locally recruited daily laborers.

54. Depending on the results of the observation period, which normally extends over two years, the Agronomic Group decides whether to advance the OA to a DA or to exclude it from further project activities. If promoted to a DA, one supervisor, one extension agent, and one marketing assistant are assigned to the area in addition to the extension agent who was there during the observation period. In each of the two agent areas within the DA, five model farmers are selected through whom the demonstration effort is promoted. Under the guidance of the area supervisor demonstrations of available innovations are undertaken and inputs on credit or cash are made available to farmers in each extension agent's area.

55. After a year of demonstration activities, the DA is established as an MPP area at the beginning of the fourth year, and is staffed by one supervisor, five extension agents, and as many as five marketing assistants depending on the volume of sales in the area. During subsequent years, the number of model farmers is gradually increased in each MPP area until it reaches one model farmer per 100 farmers(41). After three years of MPP activities, the number of extension agents (including those for home economics) will be increased depending on the yearly incremental number of participating farmers. The supervisor is responsible for all activities in his MPP area, but he gets necessary supervision and technical assistance from the groups within the Extension Division (42).

APPENDIX III

ADOPTION OF INNOVATIONS AT CADU

1. The Extension and Training Department is responsible for the dissemination of information to project-area farmers. Each extension area starts with at least one extension agent and by the end of the third year two assistant extension agents are added in order to intensify the extension activities. Each extension area comprises 1,500-1,800 farmers and 10-15 model farmers. Specially selected and trained model farmers, demonstration plots and occasionally CADU's own farms are used as the major means of influencing farmers so that a high rate of adoption of innovations is attained.

2. It is important to distinguish among different categories of adopters according to reactions to an innovation. In the usual adoption process, the number of adopters and the extent of their adoption of an innovation is a function of time. Sequentially, adopters are classified as innovators, early adopters, early majority, late majority, late adopters, and laggards. This classification is important because the source of influence varies with the different classes of adopters. Generally for late adopters the influence of nearby sources such as neighbors and relatives is very important, and there is a strong pressure on them to adopt. In the case of CADU, for example, one would expect the early adopters to be influenced to a large extent by the extension agents, the demonstration pilots, the model farmers and the CADU farms, and the late adopters to be influenced more by neighboring farmers who have already adopted.

3. For analyzing the adoption process within CADU, four innovations will be considered: improved seed, fertilizer, soil preparation with improved implements and row planting. To simplify the analysis, three broad categorizations of farmers will be distinguished. All farmers dealing with CADU will be classified as adopters; farmers not dealing with CADU will be classified as non-adopters; and the third class will be the model farmers (who are adopters).

4. To begin with, it might be worthwhile to look at the 1968 and 1969 credit programs, whose credit policy was designed to promote the rapid introduction of the innovations in the project area as well as to publicize CADU. Even though statistics from the Office of the Provincial Government of Arussi for 1971 show the proportion of farmers in Chilalo to be 57% tenants, 38% landowners, and 5% settlers on government land; and CADU publications give a 52% and 48% breakdown between tenants and landlords respectively, Table 1 shows that the proportion of tenants purchasing seed and fertilizer on credit to be smaller than one would expect to happen by mere chance. Of those who took seed on credit 85% were landowners and only 14% were tenants. Of those who took fertilizer on credit 90.4% were landowners compared to only 9.5% tenants. This indicates that the tenants were not able to take

the same advantage of CADU services as the landowners. From the farm plans of the 1968 and 1969 credit-takers, the average area cultivated by landowners was calculated to be 7.3 ha.(19). The "General Agricultural Survey of 1970" gives the average area cultivated by landowners to be about 5 ha. (25). During the first two years of CADU, therefore, participating landowners had more cultivated land than the average landowner, and to a large extent, the bigger farmers were the early adopters. Of course, it is difficult to say what would have happened if participation had been limited to small farmers only from the outset.

Table 1: DISTRIBUTION OF INPUTS ON CREDIT BETWEEN LANDOWNERS AND TENANTS

CADU 1969

	Seed				Fertilizer			
	Number of		per Buyer		Number of		per Buyer	
Area	Landowners	tenants	Landowners	tenants	Landowners	tenants	Landowners	tenants
Huruta	14[illegible]	-	6.1	-	128	-	3.0	-
Ibeya	12[illegible]	6	10.4	5.7	62	2	10.2	1.5
Gonde	4[illegible]	4	11.2	16.8	36	2	13.1	95.0
Bilalo	4[illegible]	20	1.9	1.2	35	8	1.5	1.1
Asella	3[illegible]	14	7.8	5.3	20	4	20.7	6.0
Kechema	70	33	2.7	2.2	31	15	1.8	1.1
Samure	167	49	2.[illegible]	2.4	124	25	1.9	1.3
Temeda	11	2	2.3	2.0	7	1	2.1	0.5
Dighelu	22	3	2.3	1.8	17	-[illegible]	1.0	-
Total	565	131	5.7	3.1	471	51[illegible]	4.9	4.8
%	86%	14%	-	-	90.4%	9.6[illegible]	-	-

Source: Compiled from CADU Credit Program 1968/69 and CADU Special Study No. 3.

5. Another study was done on the Gonde extension area, chosen because it was known to represent all categories of farmers. Table 2 shows the dis-

tribution of adopters in the area. Distance refers to the shortest way between the Extension Office and the house of the adopting farmer. The study shows that of the number of adopters in the entire extension area, 72% were within 5 kms of the area extension office, 25% were located between 5 and 10 kms from the extension office and only 4% of the adopters were living 10 to 15 kms away. This is rather interesting because the way the extension activities are distributed through model farms, one would expect a fairly even distribution.

Table 2: DISTRIBUTION OF ADOPTERS AROUND THE GONDE EXTENSION OFFICE, SPRING 1970

Distance from Extension Office (km)	Number of Adopters	Adopters as % of all Adopters
0-4.9	38	71.1
5-9.9	13	24.5
10-15	2	3.7
Total	53	100.0

Source: CADU Minor Research Task No. 3.

6. Analysis of the socio-economic status of the adopters within the Gonde extension area shows a marked difference among the different categories of adopters (Table 3). The non-adopters seem to have smaller cultivated areas than the adopters. They have fewer number of cows and oxen. They are less often members of groups and associations. They have a lesser ability to read and write. Most of them are tenants (only 10% of adopters were tenants). Of the adopters, the modern farmers cultivate smaller farms but they are more literate, younger and are more frequently members of groups.

7. In an effort to find out why the non-adopters did not buy seed and fertilizer on credit, several questions were asked. Fifty percent of the respondents said they had no money for the down-payment, 16% did not believe that it was beneficial to take credit, and 15% said that their landlords were not willing to share the costs or guarantee the loan (28). Similar questions indicated that most adopters had money available for the down-payment.

8. A study on the amount of awareness of some innovations (Table 4) has also indicated the non-adopters to be less aware of them even though on

the whole there was high awareness by all categories except of CADU's tractor service. /1

Table 3: SOCIO-ECONOMIC STATUS OF THE ADOPTERS AROUND THE GONDE EXTENSION OFFICE

Socio-Economic Characteristics	Model Farmers	Other Adopters	All Adopters	Non-Adopters
Average no. of ha. cultivated	8	15	13	3
Average no. of oxen owned	5.9	6.3	6.2	3.5
Average no. of cows owned	4.9	7.5	7.0	3.3
Average no. of tasks in groups and association (like "Idir")	0.7	0.47	0.51	0.13
Percentage of tenants in group	10	15	15	49
Percentage able to read and write	70	60	62	13
Average age in years	39	48	47	46

Source: Compiled from CADU Minor Research Task No. 3.

Table 4: DEGREE OF AWARENESS OF CADU INNOVATIONS

Awareness of Different Innovations	Percentage of the Different Categories Aware				
	Model Farmers	Other Adopters	All Adopters	Tenants	Total
Seed	100	100	100	97	99
Fertilizer	100	100	100	97	99
Tractor preparation	100	100	100	100	100
CADU tractor service	70	84	81	28	59
Row planting	100	92	92	69	83

Source: CADU Minor Research Task No. 3.

1/ During its first two years of operation CADU was providing tractor services although not pushing them very hard. They were later discontinued due to unfavorable social effects.

9. Table 5 shows the farmers' opinion of the innovations provided by CADU. The indication is that there is a high rate of acceptance of the value of innovations by all categories of farmers. Generally, however, the non-adopters seem to be more skeptical about the innovations than the adopters. Of all innovations, row planting tends to be least accepted.

Table 5: FARMERS' OPINION OF INNOVATIONS

Opinion of Effect of Innovations	Percentage Responding			
	Model Farmers	Other Adopters	All Adopters	Non-Adopters
Yields higher with CADU seed	100	98	98	97
Yields higher with fertilizer	100	100	100	97
Yields higher with tractor	90	100	98	95
Yields higher with row planting	70	77	75	67

Source: CADU Minor Research Task No. 3.

10. Several questions were asked to determine the number and type of influence received by the farmers on different innovations. The findings indicated that the longer an innovation had been on the market the more sources of influence were to be found for it. Furthermore, seeing was a more important influence for recently introduced innovations and word-of-mouth is more important for the well-established innovation (28). Number of influence remembered by non-adopters are smaller than those remembered by adopters. The non-adopters tended to rely more heavily on impressions from sources nearer and more familiar to them, i.e., from sources other than CADU except the model farmers.

11. The dissemination of innovations is to a high degree centered around the extension and the demonstration plots. Questions designed to find the extent of influence from demonstration plots and the extension agents have come up with considerably different answers with respect to different innovations. In general, non-adopters mentioned results seen at demonstration plots less frequently and recalled fewer comments from extension agents. This result was to be expected because by the time the questions were asked the benefits of improved seed were accepted by most farmers and those of row-planting were just being demonstrated, and it is well understood that demonstration plots and extension agents are more effective in introducing new innovations rather than promoting already established ones.

12. The importance of the traditional (local) system of influence can be seen from the number of times that people of different categories were mentioned by farmers as the source of the main word-of-mouth influence with respect to row planting. The extension agent at Gonde was mentioned 15 times, people from CADU were mentioned 5 times and other local people were mentioned 37 times. These "other people" are few in number, richer and locally influential (28).

APPENDIX IV

SMALLHOLDER CREDIT

The Credit Situation in Areas Covered by the Projects

1. Because no thorough baseline surveys have been conducted in areas now under the three projects, information on the credit situation prior to the projects is not available. However, it is understood that virtually all subsistence farmers traditionally relied on moneylenders for credit since institutional credit sources considered lending to such small farmers a risky venture. A good indication of this is that the medium- and long-term loans outstanding to agricultural activities by the commercial bank in Ethiopia were less than 0.5% of all outstanding loans in 1969 (56).

2. Furthermore, the AID Bank, /1 which was mainly established to meet the pressing credit needs of the agricultural sector, excludes over 80% of the farming population in the nation from its credit program because of its inflexible minimum loan, collateral and other security requirements. Even though about 63% of the loans distributed during its first two years of full operation were distributed among activities in the agricultural sector (Table 1), big commercial farmers and a few cooperatives were the sole beneficiaries. For example, of Eth$19 million distributed to the agricultural sector, 78.8% was accounted for by three large-scale farms and 107 individual farmers (Table 2).

Table 1: DISTRIBUTION OF 1970-72 AID BANK LOANS

Sector	Ethiopian Dollars	Percentage
Agriculture	34,440,551.73	63.35
Industry	12,505,945.99	23.19
Other	7,318,846.01	13.46
Total	54,365,353.73	100.00

Source: Compiled from a press release for the second anniversary of AID Bank, August 28, 1972.

1/ The Agricultural and Industrial Bank S.C. (AID Bank) was established on August 28, 1970, by merging the former Development Bank of Ethiopia and the Ethiopian Investment Corporation.

Table 2: DISTRIBUTION OF THE 1972 AGRICULTURAL LOANS FROM AID BANK

Category	No. of Clients	Total Loan (Eth$)	Average Loan (Eth$)	Percentage
Cooperatives	11	4,081,202.00	370,018.36	21.2
Large-scale farmers	3	6,121,704.28	2,040,568.09	31.9
Individual farmers	107	8,993,807.78	84,054.28	46.9
Total		19,196,714.06	158,650.53	100.0

Source: Compiled from a press release for the second anniversay of AID Bank, August 28, 1972.

3. The CADU Project Area: The most widely used source of credit is short-term, non-institutional credit at interest ranging from zero percent, if the lender is a relative, to over 100% if borrower from moneylenders. A credit survey of two areas within Chilalo (Digelu and Yeloma) before CADU intensified its credit program has shown that 51% of the interviewed farmers, whose average annual income was estimated at Eth$300.00, had some debt (Table 3). Out of the 109 sampled farmers, 41.3% were owner-cultivators and 58.7% were tenants. Overall, 54% of the loans were used for improvements on the farms such as buying a new plow, hiring an extra day of labor for weeding or other productive purposes. Forty-six percent of the loans were used for consumption such as feast expenses, tax payments and court case expenses. The average size of the loan was estimated at Eth$64 for the production loans and Eth$51 for the comsumption loans. The study also indicated that only 36% of the total number of loans, or 27% of the total value of the loans, were paid back on time (16).

4. The major sources of credit were found to be relatives, close friends, other farmers and traders. About 64% of the number of loans from relatives and friends were found to carry no interest charge, compared to only 10% of the number of loans from other sources; and the average annual interest rate ranged from 34% for the loans from relatives and friends to about 110% for the loans from other sources (16). In the case of cash loans, the most common interest charge was found to be Eth$1.00 per month for every Eth$10.00 that was borrowed (18).

Table 3: A SUMMARY OF THE CREDIT SITUATION IN CHILALO BEFORE CADU EXPANDED ITS CREDIT PROGRAM /a

	All Farmers		Landowners		Tenants	
	No.	%	No.	%	No.	%
Farmers interviewed	109	100	45	41.3	64	58.7
Farmers indebted	56	51.4	22	48	34	52
% of loans taken for productive purposes	54	-	-	-	-	-
Average size of loan for productive purposes (EthS)	64.00	-	-	-	-	-
% of loan taken for consumption purposes	46	-	-	-	-	-
Average size of loan for consumption purposes (EthS)	51.00	-	-	-	-	-
Average annual income (EthS)	300.00	-	-	-	-	-

Source: Compiled from CADU Minor Research Task No. 3.

/a Digelu and Yeloma Areas.

Table 4: SOURCES OF CREDIT OTHER THAN CADU, TO FARMERS IN DIGELU AND YELOMA AREAS, CHILALO AWRAJA

Credit Source	No. of Loans	% of Loans	Value of Loans (EthS)	% of Value of Loans
Relatives	36	32.4	1,866.00	29.3
Friends	14	12.6	350.00	5.5
Other farmers	54	48.6	3,421.00	53.8
Traders and money-lenders	6	5.4	720.00	11.3
Other institutions	11	10.0	5.00	0.1
Total	111	100.0	6,362.00	100.0

Source Compiled from CADU Minor Research Task No. 3.

Table 5: COMPARISON OF CASH LOANS AND LOANS IN KIND FROM DIFFERENT CREDIT SOURCES IN THE DIGELU AND YELOMA AREAS

Credit Sources	Cash Loans			Loans in Kind			All Loans		
	No. of Loans	Value of Loans (Eth$)	Av. Loan ($)	No. of Loans	Value of Loans (Eth$)	Av. Loan ($)	No. of Loans	Value of Loans (Eth$)	Av. Loan ($)
Relatives and friends	33	1,962	59.5	17	254	14.9	50	2,216	44.3
Other lenders	37	3,795	102.6	24	351	14.6	61	4,146	68.0
Total	70	5,757	82.2	41	605	14.8	111	6,362	57.3

Source: Compiled from CADU Minor Research Task No. 3.

5. Usually some type of security was required for the loans. However, only 46% of the relatives and friends, compared to 95% of the other lenders, required security for their loans (18). Of the loans analyzed in the sample survey, 67% had some kind of written agreement, 60% had between one and three witnesses, 44% had guarantors, 9% required land as a collateral, and 73% required collateral of some sort. Only 27% of the loans were given without requiring any kind of collateral or security (Table 6).

6. Results of the Digelu-Yeloma area credit study are too limited to draw conclusions for the entire CADU project area, but interviews and discussions with CADU staff making similar observations in other parts of Chilalo seem to indicate that the Digelu-Yeloma situation is in fact representative of the Awraja.

7. The WADU Project Area: Although not as detailed as the Digelu-Yeloma area study, a similar study covering a wider area has been conducted in Wolamo Awraja by the Planning Unit at WADU. All areas within Wolamo Awraja, excluding those within the WADU project area, were included in the sample survey. As was the case with Chilalo, neighboring farmers were found to be the major lenders. Sixty-six percent of the surveyed households borrowed from other farmers compared to only 10% from traders (Table 7).

Table 6: TYPES OF SECURITY GIVEN TO DIFFERENT CREDITORS IN THE DIGELU-YELOMA AREA, CHILALO AWRAJA

Types of Security	Loans from Relations and Friends	%	Loans from Other Lenders	%	Loans: Cash	%	Loans: Kind	%	Total Loans	%
Written agreement	19	38.0	55	90.2	51	72.9	23	56.1	74	66.6
Eye-witness	19	38.0	48	78.7	48	68.6	19	46.3	67	60.4
Guarantors	12	24.0	37	60.7	32	45.7	17	41.5	49	44.1
Land collateral	2	4.0	8	13.1	10	14.3	0	0.0	10	9.0
Any kind of security	23	46.0	58	95.1	55	78.6	26	63.4	81	72.9
No security	27	54.0	3	4.9	15	21.4	15	36.6	30	27.0
Total	50	100.0	61	100.0	70	100.0	41	100.0	111	100.0

Source: Compiled from CADU Minor Research Task No. 3.

Table 7: ALTERNATIVE CREDIT SOURCES FOR FARMERS IN WOLAMO AWRAJA

Credit Sources	No. of Households Borrowing	%
Neighboring farmers	21,779	66.09
Local traders	3,158	9.58
Other sources /a	8,017	24.32

Source: Unprocessed data collected by WADU's Planning Unit.

/a Moneylenders, local associations, etc.

8. With respect to interest rates, 28% of the surveyed households paid no interest at all, about 26% paid interest ranging from 1 to 50% per annum and almost 46% of the households paid interest rates higher than 50% per annum.

Table 8: INTEREST RATES PAID BY FARMERS IN WOLAMO AWRAJA

Annual Interest Rates Charges (%)	Number of Households Paying that Rate	% of Households Paying that Rate
0	9,068	28.00
0- 50	8,278	25.56
51-100	12,919	39.40
101-150	1,763	5.44
Over 150	348	1.07

Source: Unprocessed data collected by WADU's Planning Unit.

9. The sample survey indicated that almost all of the loans given were in cash, with less than 5% being given in kind. This seems rather unusual, but most of the extension and credit marketing staff at WADU felt that it was reasonable because people in Wolamo borrow mainly to finance feast celebrations. With respect to the size of loans, only 21% of the sampled households borrow over Eth$45.00 per year (Table 9).

Table 9: DISTRIBUTION OF HOUSEHOLDS BY SIZE OF LOAN
WOLAMO AWRAJA

Size of Loan (Eth$)	Number of Households	% of Households
1.0-15.0	9,772	26.5
16.0-30.0	6,437	24.0
31.0-45.0	5,003	18.7
45.0-60.0	2,287	8.5
Above 60	3,149	12.3
Total	26,648	100.0

Source: Unprocessed data collected by WADU's Planning Unit.

10. A separate 1971 sample survey of parts of Wolamo within the WADU project area came up with similar conclusions. The majority of the households in the highlands, as well as in the settlement areas, were usually indebted, and almost all of the loans, which were predominantly taken for consumption, were made in cash. As has been the case with areas not covered by WADU, the major sources of credit in both the highlands and the settlement areas of WADU were found to be neighboring farmers, local traders, and local moneylenders. No collateral was required for most of the loans, but they required written agreement , witnesses or verbal agreements.

11. Other Areas in Ethiopia: It might seem hazardous to generalize from these limited findings. But looking at the similarity of the economic and social status of the rural population of the heteregenous parts of Ethiopia, and given the universal lack of any institutionalized credit source ready to serve the small farmer, it is probably safe to hypothesize that the credit situation revealed in the Chilalo and Wolamo areas is indicative of the national credit situation. A 1968 Stanford Research Institute Study of the credit situation in Ethiopia seems to support this hypothesis (56).

12. The study classified farmers into four groups on the basis of their credit needs. The first category consisted of subsistence farmers whose credit needs during a season are on the average less than Eth$50.00 and who borrow to meet their consumption needs rather than for production. In contrast, the fourth category, or "class IV," consisted of farmers who have had some education, who owned large tracts of land, who had no need for small consumption loans, and who by virtue of their position were eligible for long-term loans from financial institutions. The "class II" and "class III" farmers consisted of owner-cultivators cultivating at least 2 ha. of arable land but operating at subsistence levels. Unlike "class I," they were in need of small loans for production purposes. According to the study, farmers included in "class III" were estimated to be just over 90% of the farming population in Ethiopia, with "class I" alone constituting 87% (56).

APPENDIX V

ORGANIZATION OF THE MARKETING SYSTEM IN ETHIOPIA

1. In Ethiopia, the maj marketing activities are undertaken by private traders. There are no marketing boards and the cooperative movement is in its infancy.

2. The marketing system is characterized by some degree of competition since few barriers restrict the entry and exit of merchants. Along with an assortment of agents and brokers, the existing marketing system involves assemblers, retailers and exporters to the terminal markets. Most producers sell their surplus supplies directly to assemblers in the village markets. Agents are frequently employed by assemblers and wholesalers to procure supplies for the village markets. The wholesalers, who deal in large quantities, sell mostly to retailers, and in the case of wheat, to the large wheat-flour mills.

3. At the village- and primary-market level, there is usually one major market day and one minor market day per week. At the terminal markets, however, there are large daily central markets selling mostly to final consumers and retailers. The terminal markets at Addis Ababa, Asmara and Nazret are the major price setters.

4. The number of marketing intermediaries involved in each transaction depends on the distance between the producer and the consumer. In the rural areas there is usually one transaction between the producer and the retailer and another one between the retailers and the consumer. In some cases, there may be only one transaction involving the producer and the consumer. In small towns, there are as many as three transactions involving the producer, the assembler, the retailer and the consumer. In terminal market towns there may be five transactions, which involve the producer, the assembler at the village market, the assembler at the primary market, the wholesaler, the retailer at the terminal market and the consumer.

Types of Markets

5. Village Markets: It is through the local rural markets that most of the marketable surplus grains enter the marketing system. These markets function not only as assembling points for surplus foodstuffs but also as retail distribution outlets for locally produced and imported commodities.

6. These markets meet periodically, mostly twice or three times a week. The rural markets generally have only scant facilities. Retailers seldom have more than a cover spread on the ground. Assemblers who are not residents of the market area generally have no facilities and remove their purchase from the market on the same day.

7. The area served by a market is delimited by the [illegible] in travelling to it. A survey of the Sagure village market in Ch[illegible] shown that the periodic markets (both during major and minor market days), reach their peak trading activity between 11:30 and 12:30, and the peak departure time is about 15:30. Thus normally the market must be within about 5 hours walk, or about 30 km at the most. The same survey has shown that 88% of the market visitors on a major market day travelled less than 20 km to market while the remaining 12% travelled between 20 and 30 km.

8. How often a person attends a market depends mainly on the extent of his dependence on the market for exchanging his surplus production for other products. In most cases, however, markets draw attendance of visitors simply for the social life they offer.

9. Primary Markets: The primary markets are usually very similar in function to the village markets, only considerably larger, since they serve more producers and consumers. Farmers from surrounding areas and merchants who procure supplies from surrounding village markets come here to sell mostly to large assemblers or to their agents, who in turn ship most of their purchases to a terminal market. In addition, there are retailers selling a wide array of goods and some wholesalers in the primary markets.

10. Terminal Markets: Addis Ababa and Asmara are the major terminal markets. Brokers are used for all major sales and purchases in these markets, and they are instrumental in setting prices. Prices established at the terminal markets to a large extent govern corresponding prices in the lower-level markets.

11. Marketable Surplus: There is no quantifiable information regarding the proportion of surplus grains and pulses passing through the various marketing channels in Ethiopia. However, a study by the Stanford Research Institute has come with up some estimates. Based on the assumption that about 18% of the population was market-dependent for its grain and pulse needs in 1969, of which 11% was in Addis Ababa and about 4% in Asmara, the study concluded that the terminal markets in Addis Ababa and Asmara consumed just over 15% of the total market supplies, and the remaining urban centers another 10% (57). According to this same study, assemblers handled an estimated net total of 50% of all marketable surplus grain, wholesalers handled 20% of the total, and processors handled about 10% (all in wheat). Retailers handled only 45% of the grain in the marketing system because consumers bought almost 25% directly from producers in rural areas. Only in terminal markets and large primary markets were most grains found to have run the full sequence of intermediaries.

12. It is very difficult to get an estimate of the marketable and marketed surplus grains generated by the package projects. However, a rough estimate will be made for CADU based on some per capita consumption figures available from the Central Statistical Office and estimates of actual production of the different crops. The CSO gives the yearly per capita con-

sumption of Arussi Province for the four major crops for 1971. The population for Chilalo in 1971 was estimated at 400,000. Assuming the per capita consumption of Chilalo to be the same as that for Arussi and that it grows at 5% per annum for all crops as estimated by the Stanford Research Institute 1/ and further assuming an annual population increase of 2.5%, 2/ the following estimates of the marketable surplus of the major project-area products were made.

Table 1: ESTIMATES OF MARKETABLE SURPLUS IN CHILALO, 1971 and 1976

Crop	Annual Per Capita Consumption (kg)	Total 1971 Consumption Chilalo (ton)	Total 1971 Output, Chilalo (ton)	1971 Surplus, Chilalo (ton)	Annual per Capita Consumption (kg)	Total 1976 Consumption, Chilalo (tons)	Total 1976 Output Chilalo (tons)	1976 Surplus, Chilalo (tons
Wheat	41	16,400	54,380	+37,980	51	23,100	97,850	+ 74,750
Barley	98	39,200	108,770	+71,570	112	50,700	193,610	+142,910
Peas	5	2,000	5,950	+ 3,950	7	3,200	13,200	+ 10,000
Beans	10	4,000	12,310	+ 8,310	13	5,900	13,470	7,500

Source: Compiled from CSO and CADU publications.

Table 1 shows that Chilalo has an increasingly expanding marketable surplus of the four major crops of the area that needs to be exported to other parts of the country. For a more correct estimation of the total marketable production, however, knowledge of consumption elasticities is necessary.

Price Determination at Different Markets

13. At the national level, grain prices are largely determined by the interaction of the supply of and the demand for marketable surpluses at the terminal markets, and they determine prices at lower-market levels. For example, grain merchants in Chilalo, as well as CADU's marketing division, relate their buying prices to the net price that they expect to receive in Addis Ababa.

1/ Questions have been raised about the reliability of this estimate, (57).

2/ CADU Minor Research Task No. 3.

14. The most important merchants involved in setting the general level of prices for the entire grain marketing system are the large assemblers and wholesalers in Addis Ababa. Both groups control large supplies of grains and they both undertake considerable seasonal or speculative storage. Their collective expectation of the supply-demand relationship and their ability to support the market are the major price determinants. The Ethiopian Grain Corporation is now the single most important merchant in the marketing system. However, it is small in relation to the total market, handling only about 3% of the marketable surplus in 1968 (57).

15. Price setting at the assembler-wholesaler level in Addis Ababa is facilitated by brokers, who represent both the sellers and the buyers. At a fee of not more than 0.5% of the value of the transaction, brokers usually negotiate the most favorable transactions (57). Being familiar with the daily arrival of supplies and the available stocks in Addis Ababa as well as knowing most of the important merchants, brokers help in making the Addis Ababa terminal market a more competitive and effective market.

16. In smaller and less important primary and village markets, only a small number of merchants, generally with limited resources, compete for supplies. Furthermore, the corresponding supply area is relatively small with the likely result that supplies and prices will fluctuate considerably between places and over time.

17. The general price level for pulses in the terminal markets is closely related to world market prices. Thus, the price paid in the local marketing system for pulses reflects anticipated export prices, with the exporter taking the risk of price fluctuations. Ethiopia, accounting for less than 5% of the total world export of pulses, is a price taker in the world market (57). Thus, the major difference between price determination of grains and pulses is that the basic price of pulses is not formed by the supply and demand relationships in Ethiopia but rather by the price available for Ethiopian pulses on the world market.

Market Information on Supplies, Stocks and Prices

18. The range and relevance of the market information available to each party in a transaction is usually directly related to the size and extent of his market involvement. For example, the larger assemblers receive frequent price information directly from the terminal markets by telephone. The small farmer, on the other hand, is entirely dependent upon what he can learn from his neighbors and the local village or primary markets. As a result, the bargaining power of the smaller party in each transaction is generally less because of his lack of price information and alternative outlets.

19. Nothing is being done, either at the national level or within the projects, to alleviate this lack of market information at the village and primary level of the marketing system. However, the proposed "Free Grain Scaling Service" by CADU may indirectly result in improving the situation within CADU. The program proposes to look into the possibility of having

project-area farmers freely use CADU-supplied scales for checking the weight of their grain and at the same time be given a rough idea of the quality of their produce and the range of prices they can expect at their markets.

20. This plan was tried on an experimental basis in four village markets and the primary market at Asella. In almost all of the areas where the program was operative, local merchants resented it vehemently, and at times violently. In Bekoji and Asella, the municipality chiefs opposed the whole idea of the program. Intervention of the Governor General was required to implement the program in Asella. In spite of these setbacks during the two and a half months that the program was operative, however, the Planning and Evaluation Section considered the experiment a relatively successful venture and has suggested running the program in the future on an expanded basis.

21. In general, the lack of adequate and reliable information at all levels of the marketing system is a primary cause of the unequal bargaining power of the producers, poor producer prices and the low-level of inter-market price consonance. Information about supplies, stocks and prices is absolutely essential to the smooth working of the marketing system.

Transportation

22. The availability and cost of transportation is a major determinant of the cost efficiency of the marketing system. Transportation also largely determines the amount and location of the marketable surpluses that can be efficiently integrated into the marketing system. The country's objective of changing the subsistence economy into a market economy is very closely associated with the expansion of the transportation network.

23. Most grains and pulses are handled over medium and long distances by trucks. From the farm to the village and primary markets, however, mules and donkeys provide the most frequent mode of transportation. The condition of the dry-weather roads varies considerably, as do the per ton-kilometer transportation charges (Table 2). The difference in the cost per ton-kilometer relates to the availability of backhauls, the conditions of the road surface, the terrain covered and the degree of competition among transporters on the routes. The rates specified in Table 2 refer to those of the CADU Marketing Division where availability of backhaul was assured, since arrangements were made for the haulers to carry fertilizer from Addis Ababa to Asella and the various trade centers, and to carry back grains from the trade centers to Asella, Nazret and Addis Ababa. The variability of the transportation rates is very apparent in this sample of rates paid by the CADU Marketing Division.

24. The long hauls over all-weather roads have the lowest cost per ton-kilometer. Short hauls over all-weather roads are relatively expensive. Even though it is not very clear from this table, those hauls that require travel over dry-weather roads are expensive even for long hauls, as was shown by the decline of the rate from Addis Ababa to Gimbi from Eth$120 per ton to Eth$45 per ton following the completion of the all-weather road (57).

25. The animal and human porterage undertaken by farmers and local assemblers is a major element in moving surpluses to the village and primary markets, and hence, into the marketing system. Animal porterage is also used in moving merchants' purchases from small and remote rural markets to the large markets.

Table 2: TRANSPORTATION CHARGES FOR GRAINS PAID BY CADU'S MARKETING DIVISION

From	To	(Eth$) per q	Distance (km)	(Eth$) per ton-km
Addis Abata	Nazret	1.60	100	0.10
Addis Abata	Asella	1.80	175	0.11
Nazret	Asella	0.80	75	0.11
Asella	Sagure	0.50	21	0.24
Asella	Lole	1.00	33	0.31
Asella	Billalo	0.30	11	0.27
Asella	Kersa	1.60	57	0.28
Asella	Asella Trade Center	0.10	2	0.50
Asella	Kofele	3.75	370	0.11

Source: CADU Marketing Division files.

26. Transportation by animals is relatively expensive, however. The Imperial Highway Authority has estimated Eth$2.40 per ton-kilometer as the cost of carrying goods by mule or camel (56).

27. The potential savings that would accrue from the construction of feeder roads in the surplus-producing area are therefore likely to be large. The cost of getting the produce to the primary market and the price offered at the market determines the supply area and the quantity coming from it. Therefore, lowering the cost of moving produce from the farm to the market should increase the size of the supply area associated with each market. This would have the advantage of increasing the marketable surplus supplies and lowering of marketing margins as the result of lower assembling costs and a greater by-passing of local markets.

Grades and Standards

28. There are no formally established grades for grains and pulses throughout the country. In practice, varietal differences are used as a measure of intra-commodity differences. For example, with teff, three color gradations ranging from white to red are recognized in almost all markets. Similarly, three color-based varieties are recognized for wheat and barley by the large merchants such as the Ethiopian Grain Corporation and the flour mills (Table 3). Quality differences based on such measures as specific gravity, moisture content and level of impurities are not recognized systematically by the marketing system.

Table 3: PREDOMINANT COLOR OF VARIETY

	Teff	Wheat	Barley
Variety I	Red	Black	Black
Variety II	Mixed	Brown	Gray
Variety III	White	White	White

Source: SRI Report No. 16, Marketing of Grains and Pulses in Ethiopia and CADU Marketing Division interviews.

29. Currently, the marketing division at CADU is purchasing wheat from farmers on the basis of four specific grades. The grade specification is based on the level of impurities. This was possible because CADU was able to contend with the major national problem of the mixed nature of the seed stocks through the distribution of improved wheat varieties of uniform quality (Table 4).

30. The main reason for the current market classification of grains on the basis of the predominant color is that all grains produced and sold are composed of a mixture of varieties since the seed stocks are extremely mixed. An analysis of four wheat and three barley samples by a Stanford Research Institute Marketing Study in Ethiopia showed that, although the black varieties were predominant in each sample, the other varieties made up as much as 17% of the total weight of the wheat and 25% of the barley (57). Another major problem is the lack of a sufficient penalty for the inclusion of foreign matter in the commodity sold.

Table 4: RANGE OF PRICES FOR DIFFERENT GRADES OF WHEAT AT CADU, 1972

Grade	Maximum Impurity Allowed (%)	Purchase Price per Quart
I	2.5	as fixed per Grade I per trade center
II	5.0	Grade I minus Eth$0.50
III	7.0	Grade I minus Eth$1.00
IV	above 7.0	Grade I minus Eth$3.50

Source: CADU Marketing Division files.

31. Local threshing methods (running animals over the dried grain stalks on the ground) often result in a very high weed-seed and foreign matter content. One study has shown that weeds and foreign matter in the wheat samples ranged up to 25% by weight and up to 24% in barley (27). In general, therefore, the marketing system is not yet able to distinguish quality and hence reward merchants and producers on that basis.

32. This inability occurs despite the fact that consumers usually show explicit preferences in regard to grades and varieties of a commodity. For example, Table 5 shows that the annual wholesale prices of red teff compared with brown, and brown wheat compared with white were considerably different. Interestingly enough, it was also noted that in periods of increasing scarcity, the price difference between varieties tended to decrease and vice versa (57).

33. The metric system is a well-accepted standard system of weights and measures in Ethiopia. However, there has been very little government checking of the weights and scales used by big traders. Furthermore, even if the scales used indicate the weights correctly, most producers must rely on the traders to tell them the indicated weight of their produce since they cannot read. The CADU marketing experiment found that, in most cases, the farmers were being "cheated," either by false weighing or by incorrect calculation of the amount of money their produce was worth. The study indicated that 20 out of 29 traders (69%) paid a sum ranging from 80% to 95% of the correct amount, which is on the average Eth$3.00 per quintal less than correct amount (27).

Storage Needs by Farmers

34. Even though the activities of the package projects have resulted in more or less doubling the production of peasant farmers, it would still

Table 5: COMPARISON OF INTRA-COMMODITY PRICE DIFFERENCES

Year	Red Teff (Brown Teff = 100)	Brown Wheat (White Wheat = 100)
1962	74	90
1963	79	92
1964	80	96
1965	89	95
1966	89	93

Source: SRI Report No. 16, Marketing of Grains and Pulses in Ethiopia.

not be far from the truth to assume that small owner-farmers and small tenants paying rent in kind have less marketable surplus grain than large tenants (contract farmers) and big landowners. In addition, most farmers are under considerable pressure to sell most of whatever marketable surplus they have within the first few months after harvest, since borrowed money, taxes and other fees are usually collected at about the time when harvesting is at its peak. Even credit granted by the projects is due at the peak of the harvest season. Consequently, most farmers have no need to undertake more seasonal storage than that required to meet their own needs.

35. A 1970/71 weekly purchase of grain by CADU emphasized this point. It showed that there were no purchases made after April, indicating that farmers had sold whatever marketable surplus they had by then. With the peak harvest time for the initial CADU project area ranging between mid-December and mid-January, 11% of the purchases were made in November, 28% in December, 27% in January, 27% in February and only 7% in March (Table 6).

36. This pattern is in spite of the fact that, in the CADU project area, the superiority of the local storage method over other newer methods has been confirmed by the Agricultural Engineering Department of CADU. The dry matter loss of the local storage bins was only 2% compared to 6% for the Haile Selassi I University Experiment Station fabricated modern bins. The losses due to weevils, rats and insects were found to be roughly 5% (30).

Seasonal Storage by Traders

37. With farmers selling the bulk of their surplus soon after harvest and consumers demanding grains and pulses over a much longer period, intermediaries in the marketing system must necessarily undertake substantial

Table 6: MONTH. . PURCHASE OF GRAIN, CADU
1970/71

Month	Volume in q	%
November 1970	3,200	11
December 1970	8,200	28
January, 1971	7,800	27
February, 1971	8,000	27
March, 1971	2,000	7
Total	29,000	100

Source: CADU Statistical Digest.

seasonal storage. Retailers usually undertake only short-term storage, implying that most storage is undertaken by assemblers and wholesalers, and also by millers in the case of wheat.

38. Numerous small merchants living in urban centers also undertake considerable seasonal storage. They buy at harvest time and in some cases receive grains in repayments of loans, or from forward purchase, at harvest season prices. A few large merchants are able to amass considerable resources for the holding of grains and pulses. The largest of these, the Ethiopian Grain Corporation, possesses 29,000 tons of modern bulk storage capacity and 10,000 tons of bag capacity at 13 locations (57).

Source of Credit for Traders

39. The Commercial Banking system provides over one-half of the operating capital of the large merchants. In local trade of grains and pulses, the Commercial Banks financed estimated holdings of 50,000 tons, which is over one-quarter of all the grains and pulses consumed in the terminal markets and large urban areas in 1967. There are no available data for recent years, but an interview with the manager of the Commercial Bank at Asella indicated that the demand for credit by local merchants is increasing, even with obligatory 200% collateral (57). For additional security, the Bank holds title to the goods that are stored by the merchants.

40. The Commercial Bank of Ethiopia makes loans to traders as low as Eth$1,000.00, at interest rates varying from 7% to 9% per annum, in the

hope of building up their businesses to the point where it could profitably loan to them (55). The major barrier to expansion of credit, however, is the general requirement by the Commercial Banking system of security of approximately 200% on each loan granted. Such a stringent policy not only limits the credit available to traders, who themselves tend to have little mortgagable real property, but also restricts the general expansion of credit.

41. Improved credit facilities and resources are essential at all levels to modify seasonal storage problems. Obviously, an improved system of producer credit would enhance the bargaining position of producers by freeing them from the need to sell their surplus immediately after harvest. The ability of a sufficient number of producers to withhold even a marginal amount would tend to raise the average price received by all producers. Furthermore, an improved system of trader credit would increase the resources available for seasonal storage and generally improve the operating efficiency of the marketing system.

Temporal Price Behavior

42. The behavior of commodity prices resulting from basic changes in supply-demand relationships, but over different time periods, can be analyzed in terms of seasonal, cyclical, trend and irregular factors. Information is available only for the project area within CADU; for analysis of the temporal price behavior, two terminal markets, one primary market, and two village markets have been selected. Price data were collected from CADU and in few cases from information provided by the Ethiopian Grain Corporation. The major problem in using these data stems from the differences in methods used in collecting the figures, the honesty of the individual collectors and the general reliability of the price data. Due to the lack of sufficient time series information on price (complete data was available for three years only) only graphic analysis is used to indicate the seasonal price fluctuations at the different market levels as well as to show cyclical variation. For illustrative purposes, the most important crops within the CADU project area, wheat and barley, have been selected.

43. The seasonal price movement is best illustrated by the oscillation of the monthly prices. The pattern of price movement at all market levels is very similar, with the exception of some differences in the months of lowest and highest prices. The highest price falls between the months of July and September, with September being the most usual. The lowest price occurs between January and March, but most usually in January. This low coincides with the major post-harvest period of marketing by farmers, while the period of high prices corresponds with the pre-harvest scarcity of foodstuff.

44. One would expect the range of the seasonal price differences to be narrower for terminal markets compared to the village-level markets due to the greater availability of storage, information and other facilities. This is not clearly apparent in this study, even though variation between commodities and between the marketing levels is observable. Among the

Table 7: ACTUAL DIFFERENCES BETWEEN THE MAXIMUM AND THE MINIMUM PRICES FOR 1970 ($)

Produce	Addis Ababa	Nazret	Asella	Dera	Huruta	Iteya	Sagure	Bekoji
White wheat	21.52	10.84	7.98	13.00	10.42	-	6.13	8.15
Brown wheat	10.12	8.25	6.75	11.80	4.55	-	6.50	-
Black wheat	--	-	5.85	15.04	5.22	-	6.38	7.20
Mixed wheat	-	-	6.20	8.36	5.48	-	8.00	7.37
White barley	12.63	14.50	12.43	14.37	11.18	-	8.30	11.45
Black barley	-	-	12.25	13.75	12.20	-	9.45	11.20
Mixed barley	-	-	12.13	14.42	10.52	-	8.77	11.70
Flax	-	-	13.40	16.82	3.48	-	3.19	8.50
Rape seed	6.80	6.50	7.40	8.58	5.00	-	-	-
Peas	16.47	23.34	14.58	7.93	13.33	-	-	12.15
Lentils	11.02	8.00	10.12	9.38	4.75	-	-	-

Source: Compiled from CADU Statistical Digest and Ethiopian Grain Corporation files.

grains, the difference between the maximum and minimum prices for 1970 ranges from $6.20 for mixed wheat to $12.13 for mixed barley in Asella, and from $7.37 to $11.70, respectively, in Bekoji (Table 7). For pulses, it ranges from $6.50 for rape seed to $23.40 for peas in Nazret, and from $5.00 to $13.30, respectively, in Huruta. This instability in the seasonal price pattern results primarily from deficiencies in the marketing system such as the relatively uncoordinated nature of storage, the poor inter-market integration, the crowding of most farmers' sales into a short post-harvest period and the general lack of capital for investment in storage and marketing facilities.

45. In a perfectly integrated market, the price of a commodity should be the same in all markets after transfer costs between markets (transportation, handling, and other variable costs) have been deducted. Thus, prices in deficit areas must be higher than in surplus areas by an amount equal to the transfer costs. In this study, a comparison of the price differences with the cost of moving supplies between markets is used in analyzing inter-market price relationships (Tables 8 and 9).

45. The analysis of the price difference confirms the generally accepted fact that prices in surplus-supply markets are lower than in areas experiencing deficits. However, the price difference between areas is mostly greater than the transfer costs. This low degree of inter-market integration may be due to the low and loose adjustment between the markets. Any adjustment that takes place is only in response to rather dramatic price movements. Among the factors contributing to such a low degree of market integration the most important probably is the low level of market information available, particularly to smaller producers and traders, making them unaware of price discrepancies. Even if they were aware, they do not have sufficient bargaining power to influence prices significantly.

Marketing Margins

47. The total gross marketing margin is the difference between the price received by the producer and the price paid by the ultimate consumer. Normally, there should be a distinction made between the margins to assemblers, the margins to wholesalers and retailers, the margins to exporters and the margins attributed to seasonal storage. Here, however, the discussion will be limited to gross marketing margins for the sake of simplicity and because some data are not available.

48. Tables 8 and 9 show the total net marketing margins under the most favorable conditions. The analysis is based on the assumption that wheat is bought at the peak of harvest time from a village or primary market, transported to a terminal market and stored until September when the price is expected to be the highest for the year. "Transfer costs" include transportation costs and other handling and storage costs. Specifically, the following costs are included in each transfer cost figure:

(1) Transportation cost from the village or primary market to a terminal market

(2) Municipality tax, which is 10 cents per quintal

(3) A six-month storage cost, which is equal to 30 cents per quintal, based on what CADU pays for rented warehouses at terminal markets

(4) Loading and unloading costs at 10 cents for loading and 10 cents for unloading for a total of 40 cents per quintal

(a) Loading at village or primary market

(b) Unloading at terminal market for storage

(c) Loading from storages for final distribution

(d) Unloading for final distribution

49. The total net marketing margins indicated on Tables 8 and 9 do not allow for risk, fixed costs, cost of capital invested and storage costs such as weight loss, insect damage and other losses in quality and quantity. The margins seem to be high compared to a situation where the marketing system is highly integrated, but not as exhorbitant as many have indicated in the past. Interestingly enough, the margins seem to be higher when the general price level is high, indicating that in general traders benefit more than producers during years of higher prices.

Table 8: MARKETING MARGINS FOR WHITE WHEAT WITH THE TERMINAL MARKET AT ADDIS ABABA AS THE BASE

Town	Year	Primary Market or Village Price in Feb. (Eth$)	Transfer Cost (Eth$)	Addis Ababa Price in September	Net Marketing Margin (Eth$)	% of Margin
Huruta	1968	19.25	3.60	24.45	1.60	8.3
	1969	21.40	3.60	22.71	-2.29	-10.7
	1970	24.44	3.60	30.98	2.94	12.0
Asella	1968	20.25	2.60	24.45	1.60	7.9
	1969	19.60	2.60	22.71	0.51	2.6
	1970	22.80	2.60	30.98	5.58	24.5
Sagure	1968	17.00	3.10	24.45	4.35	25.6
	1969	18.20	3.10	22.71	1.41	7.7
	1970	22.00	3.10	30.98	5.88	26.7
Bekoji	1968	17.75	3.35	24.45	3.35	18.8
	1969	17.00	3.35	22.71	2.35	13.8
	1970	21.50	3.35	30.98	6.13	28.5

Source: CADU Statistical Digest and Marketing Division files.

Table 8: MARKETING MARGINS FOR WHITE WHEAT WITH THE TERMINAL MARKET AT NAZRET AS THE BASE

Town	Year	Primary Market or Village Price in Feb. (Eth$)	Transfer Cost (Eth$)	Addis Ababa Price in September	Net Marketing Margin (Eth$)	% of Margin
Huruta	1968	19.25	2.60	22.75	0.90	4.6
	1969	21.40	2.60	-	-	-
	1970	24.44	2.60	32.00	4.96	20.3
Asella	1969	20.25	1.60	22.75	0.90	4.4
	1969	19.60	1.60	-	-	-
	1970	22.80	1.60	32.00	7.60	33.3
Sagure	1968	17.00	2.10	22.75	3.65	21.1
	1969	18.20	2.10	-	-	-
	1970	22.00	2.10	32.00	7.90	36.0
Bekoji	1968	17.75	2.35	22.75	2.65	14.9
	1969	17.00	2.35	-	-	-
	1970	21.50	2.35	32.00	8.15	37.8

Source: CADU Statistical Digest and Marketing Division files.

APPENDIX VI

CALCULATIONS ON ECONOMIC RATES OF RETURN

Table 1: ECONOMIC RATE OF RETURN CALCULATIONS, CADU

Benefit calculation Item	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75
Seed								
Sold qty. of wheat seed, q (15 kg/ha)	1,400	5,465	8,250	14,660	15,000	15,000	15,000	15,000
Sold qty. of barley seed, q (20 kg/ha)	-	-	100	419	500	500	500	500
Sold qty. of maize seed, kgs. (25 kg/ha)	-	-	4,500	705	10,000	30,000	30,000	30,000
Sold qty. of fodder beet seed, kgs. (10 kg/ha)	-	-	50	196	490	700	860	980
Wheat seed, \$ per q/incr. cost per ha.	26/1	26/1	29/1	29/1	34/9	43/8	43/8	52/7
Barley seed, \$ per q/incr. cost per ha.	-	-	24/5	24/5	24/5	25/5	25/5	25/5
Maize seed, \$ per kg/incr. cost per ha.	-	-	0.5/10	1.10/10	0.6/10	0.0/10	0.0/10	0.0/10
Fodder beet seed, \$ per kg.	-	-	19	15	15	15	1	15
Fertilizer								
Sold qty. of fertilizer, q (1 q/ha.)	25	3,431	15,670	45,125	90,000	120,000	140,000	160,000
Fertilizer, price per q (\$)	38	38	39	38	36	39	39	[illegible]
Yield Increment								
Yield incr. due to barley seed, q/ha	-	-	4	4	4	4	4	5
Yield incr. due to wheat seed, q/ha	1	2	2	2	2.5	2.5	2.5	2.5
Yield incr. due to maize seed	-	-	15	15	15	15	15	15
Yield incr. due to fert. on wheat q/ha	5	5	5	5	5	5	5	5
Yield incr. due to fert. on barley q/ha	-	-	5.5	5.5	5.5	5.5	5.5	5.5
Marketing								
Bought qty. of wheat, q	460	2,300	6,314	23,980	60,000	90,000	100,000	110,000
Bought qty. of barley, q	-	-	-	520	1,500	1,500	1,700	2,000
Bought qty. of flax, q	-	710	798	6,100	9,000	9,000	8,000	7,000
Bought qty. of milk, liters x 1,000	4	136	318	159	80	140	160	170
Price/incr. price for wheat, \$/q	22/3	22/3	24/3	22/3	20/3	18/3	17/3	16/3
Price/incr. price for barley, \$/q	-	-	15/3	15/3	15/3	15/3	17/3	20/3
Price/incr. price for flax, \$/q	-	25/4	27/4	23/4	21/4	19/4	18/3	17/3
Price/incr. price for maize \$/q	-	-	12/2	12/2	12/2	12/2	12/2	12/2
Price/incr. price for milk c/liter	25/15	25/15	25/15	25/15	25/15	25/15	25/15	25/15
Benefits (\$)								
Benefits due to better wheat seed	23,240	186,903	286,272	408,800	492,000	432,000	414,000	396,000
Benefits due to better barley seed	-	-	5,500	24,145	27,500	27,500	27,500	27,500
Benefits due to better maize seed	-	-	30,600	4,760	68,000	204,000	204,000	204,000
Benefits due to better fodder beet seed	-	-	2,450	5,194	19,600	34,300	39,200	44,100
Benefits due to fertilizer (on wheat)	1,800	247,032	1,269,270	3,263,400	5,580,000	6,120,000	6,440,000	6,560,000
Benefits due to purchase of wheat	1,440	6,900	18,942	71,940	180,000	270,000	300,000	330,000
Benefits due to purchase of barley	-	-	-	1,560	4,500	4,500	5,100	6,000
Benefits due to purchase of flax	-	2,840	3,192	24,400	36,000	36,000	34,000	21,000
Benefits due to purchase of milk	600	20,400	47,700	23,850	30,000	21,900	24,000	29,500
Benefits generated from agric. activities	27,080	464,075	1,663,926	3,828,049	6,437,600	7,150,200	7,477,800	7,614,100
Cost of health service	10,000	23,610	44,000	60,585	-	-	-	-
Cost of veterinary services	15,000	23,472	18,880	65,485	93,485	93,540	137,797	115,300
Cost of water supply program	-	-	-	-	24,200	111,660	82,033	82,070
Total minimum benefits	52,080	511,157	1,726,806	3,954,119	6,555,340	7,399,657	7,675,170	7,814,970
Total net project cost	2,880,100	7,312,500	3,660,800	5,636,400	7,405,700	6,872,800	5,689,400	5,279,800
Difference	(-2,828,020)	(-6,801,343)	(-1,933,994)	(-1,682,281)	(-850,360)	+ 526,857	+1,985,770	+2,535,170
Internal rate of return = 20% over 13 years								

Source: CADU Planning and Evaluation Units.

Table 2: ECONOMIC RATE OF RETURN CALCULATIONS, WADU (Eth$ 000's)

Year	Gross Value of Additional Outputs	Project Earnings /a	Gross Benefit	Less Project Costs /b	Less Farm Inputs /c	Net Benefits
1	-	-	-	310	-	(- 310)
2	154	6	160	3,980	84	(-3,904)
3	507	22	529	2,420	114	(-2,005)
4	977	24	1,001	2,063	147	(-1,209)
5	1,673	27	1,700	1,450	150	+ 100
6	2,484	27	2,511	1,150	160	+1,201
7	2,216	280	2,496	694	165	+1,637
8	2,272	7	2,279	498	166	+1,615
9	2,283	7	2,290	492	166	+1,632
10	2,282	7	2,289	492	166	+1,631
11-20	2,282	7	2,289	469	166	+1,654

Economic rate of return 13% over 20 years

Source: WADU Appraisal Report

/a Includes gross value of crop and livestock sales from the Project Farm and residual value in year 7 of heavy machinery used in soil conservation and land clearing.

/b Includes 10% contingency, but does not include costs of farm credit inputs, which are shown as farm inputs. All costs are net of duty.

/c Includes additional farm inputs used under the project but not additional labor since there are few, if any, other opportunities for productive employment. If farm labor costs are included, the rate of return is 11%.

Table 3: ECONOMIC RATE OF RETURN C[illegible] [illegible] AGRICULTURAL MINIMUM PACKAGE PROJECT (THOUSANDS)

	EPID Costs				Costs Coop.	Cost of Roads			Incremental Stocks of	Total		Net
	HO	Obr. Areas	Tem. Areas	MP Areas	Dev. Exp.	Farm-to-Highway	Penetration	Inputs	Fertilizer	Costs	Benefits	Benefits
1971	787	306	280	831	-	-	-	200	27	2,431	417	(-2,014)
1972	1,297	285	522	1,627	-	-	-	422	28	4,181	676	(-3,505)
1973	2,085	285	458	2,214	-	-	-	1,089	90	6,221	2,294	(-3,927)
1974	2,878	285	458	3,748	146	540	-	2,189	141	10,385	4,591	(-5,794)
1975	2,746	285	458	4,819	227	1,114	792	3,776	204	14,421	8,052	(-6,369)
1976	2,240	285	458	5,557	308	1,766	3,633	5,688	235	20,170	12,290	(-7,880)
1977	2,141	143	458	6,403	439	2,486	3,783	7,868	265	23,986	17,172	(-6,814)
1978	2,214	-	458	7,092	520	3,227	3,933	10,217	282	27,943	22,566	(-5,377)
1979	1,842	-	-	7,530	601	3,469	483	12,570	291	26,786	28,233	1,447
1980	1,842	-	-	7,344	743	3,712	483	15,091	284	29,499	33,890	4,391
1981	1,842	-	-	7,184	824	3,900	483	17,332	254	31,819	38,860	+7,041
1982	1,842	-	-	6,978	895	4,068	483	19,194	199	33,659	42,884	+9,225
1983	1,842	-	-	6,257	895	3,650	483	20,639	146	33,912	45,988	+12,076
1984	1,842	-	-	5,919	895	3,225	483	21,481	81	33,926	48,000	+14,074
1985	1,842	-	-	5,581	895	2,738	483	22,077	49	33,665	49,660	+15,995
1986	1,842	-	-	5,337	895	2,212	483	22,424	27	33,220	51,170	+17,950
1987	1,842	-	-	4,721	895	1,650	483	22,611	11	32,213	52,158	+19,945
1988	1,842	-	-	4,721	895	1,650	483	22,661	-	32,252	52,746	+20,494
1989	1,842	-	-	4,721	895	1,650	483	22,682	-	32,773	53,137	+20,864
1990	1,842	-	-	4,721	895	1,650	483	22,680	-	32,277	53,378	+21,101
1991	1,842	-	-	4,721	895	1,650	483	22,635	-	32,226	53,496	+21,270
1992	1,842	-	-	4,721	895	1,650	483	22,560	-	32,151	53,503	+21,352
1993-95	1,842	-	-	4,721	894	1,650	483	22,560	-	32,151	53,503	+21,352

Economic rate of return = 15.96% over 25 years

Source: MPP Appraisal Report[illegible]

APPENDIX VII

FIGURES AND MAP

Figure 1: ORGANIZATIONAL CHART OF THE MINISTRY OF AGRICULTURE

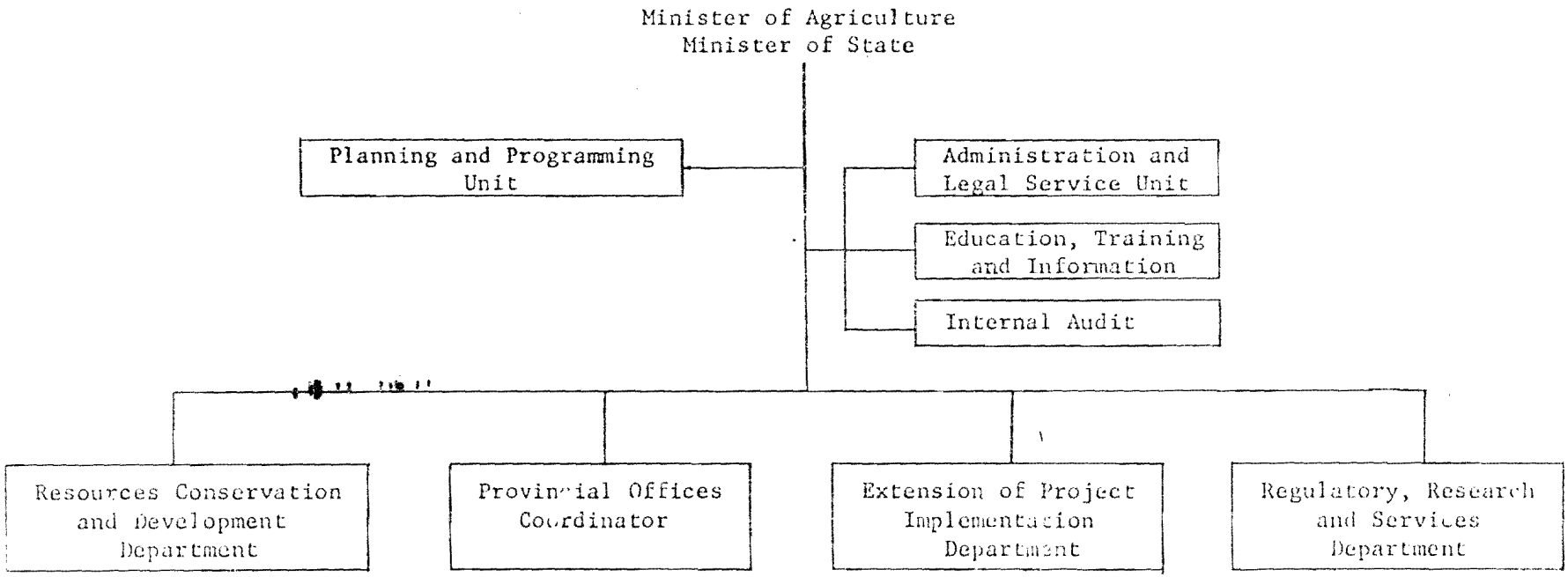

Figure 2: ORGANIZATIONAL CHART OF THE EXTENSION AND PROJECT IMPLEMENTATION DEPARTMENT (EPID)

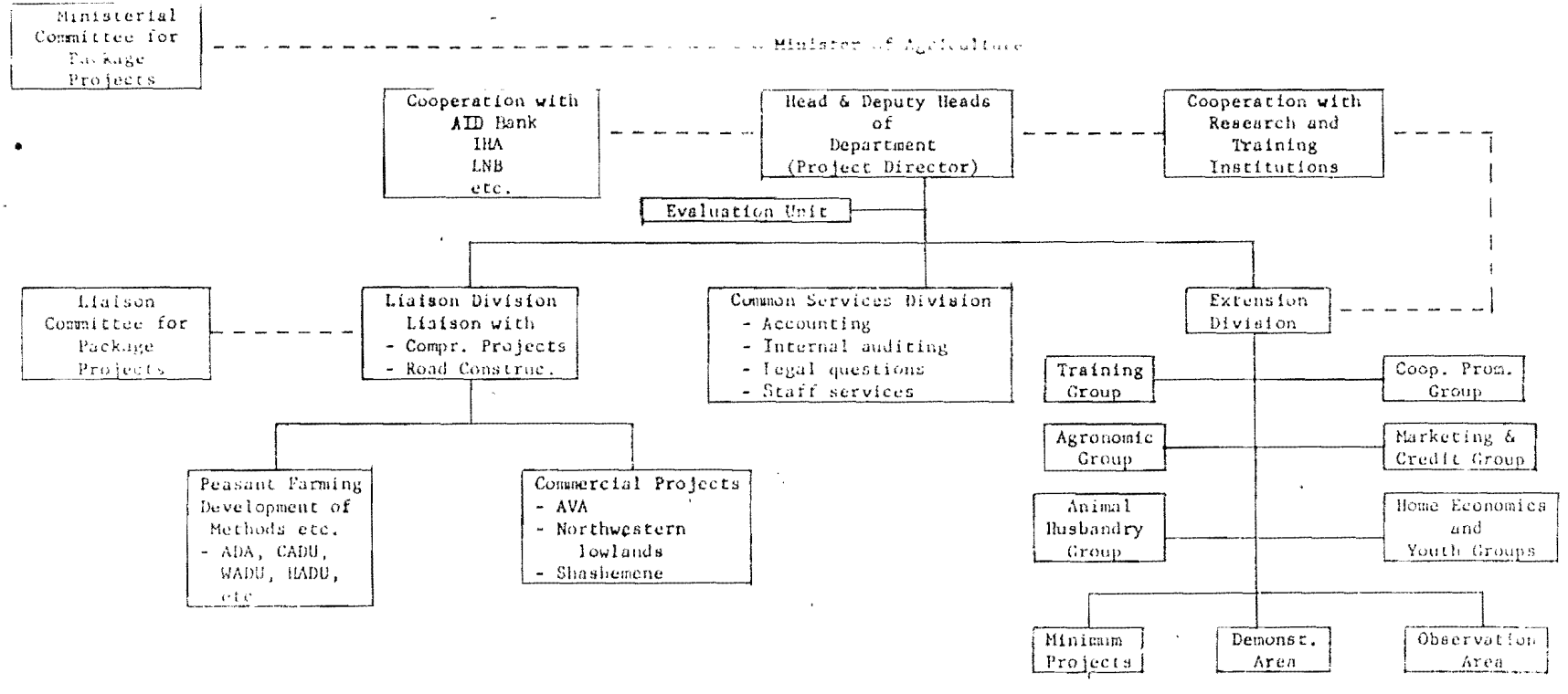

Figure 3: ORGANIZATIONAL CHART OF CADU FROM ITS INCEPTION TO JULY 1971

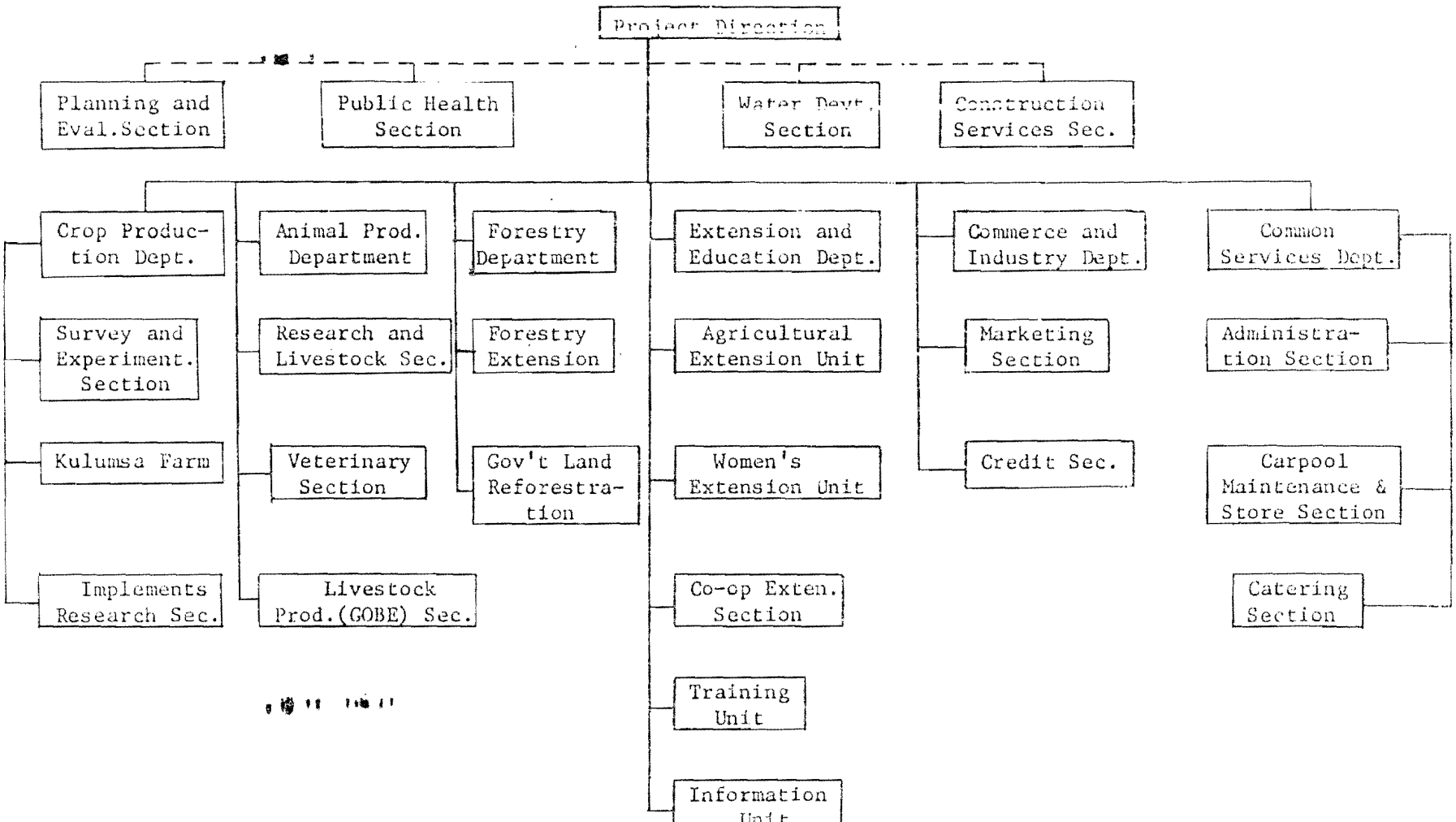

Figure 4: ORGANIZATIONAL CHART OF CADU

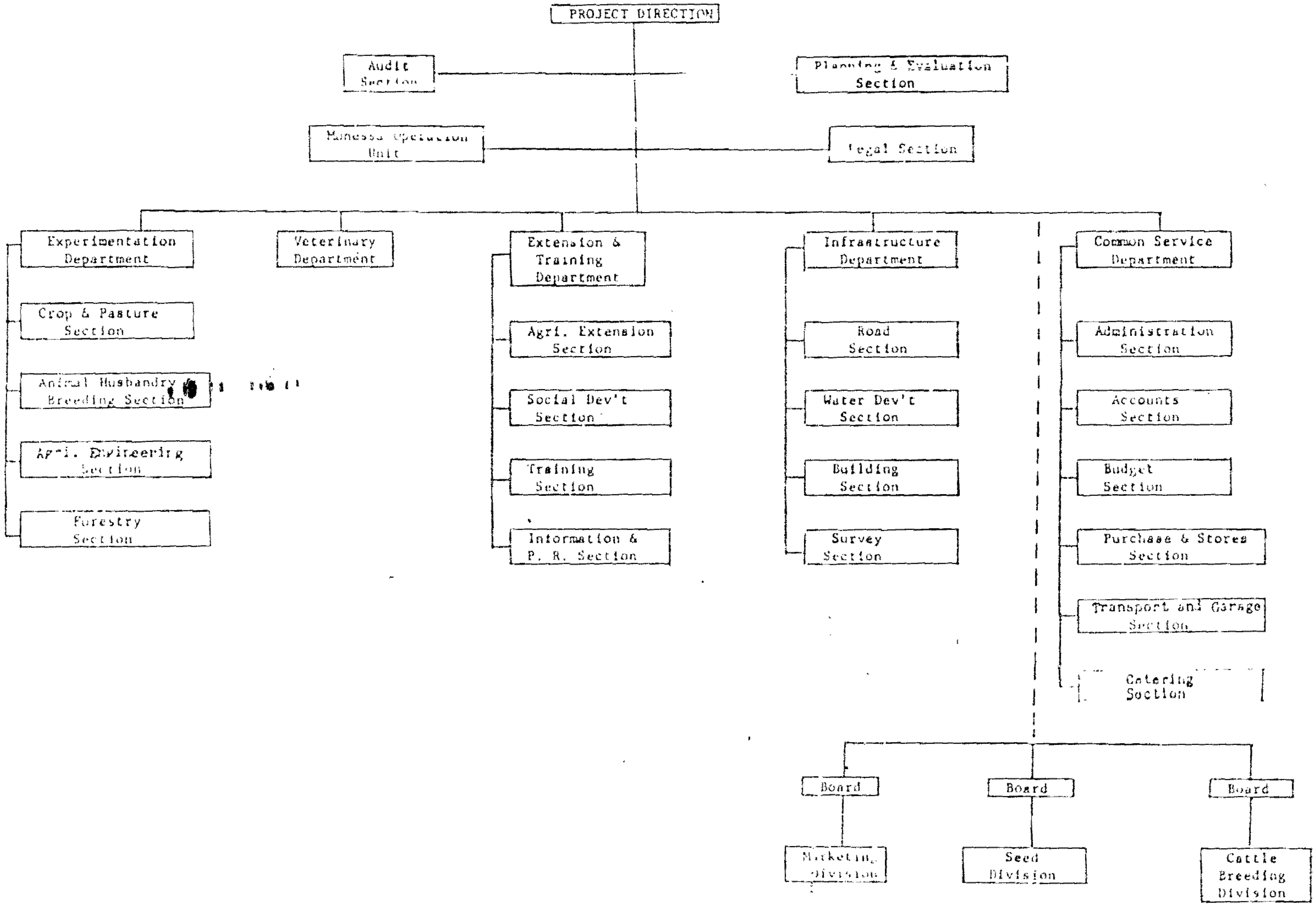

Figure 5: ORGANIZATION AND FUNCTIONS OF WOLAMO AGRICULTURAL DEVELOPMENT PROJECT, JANUARY 1970

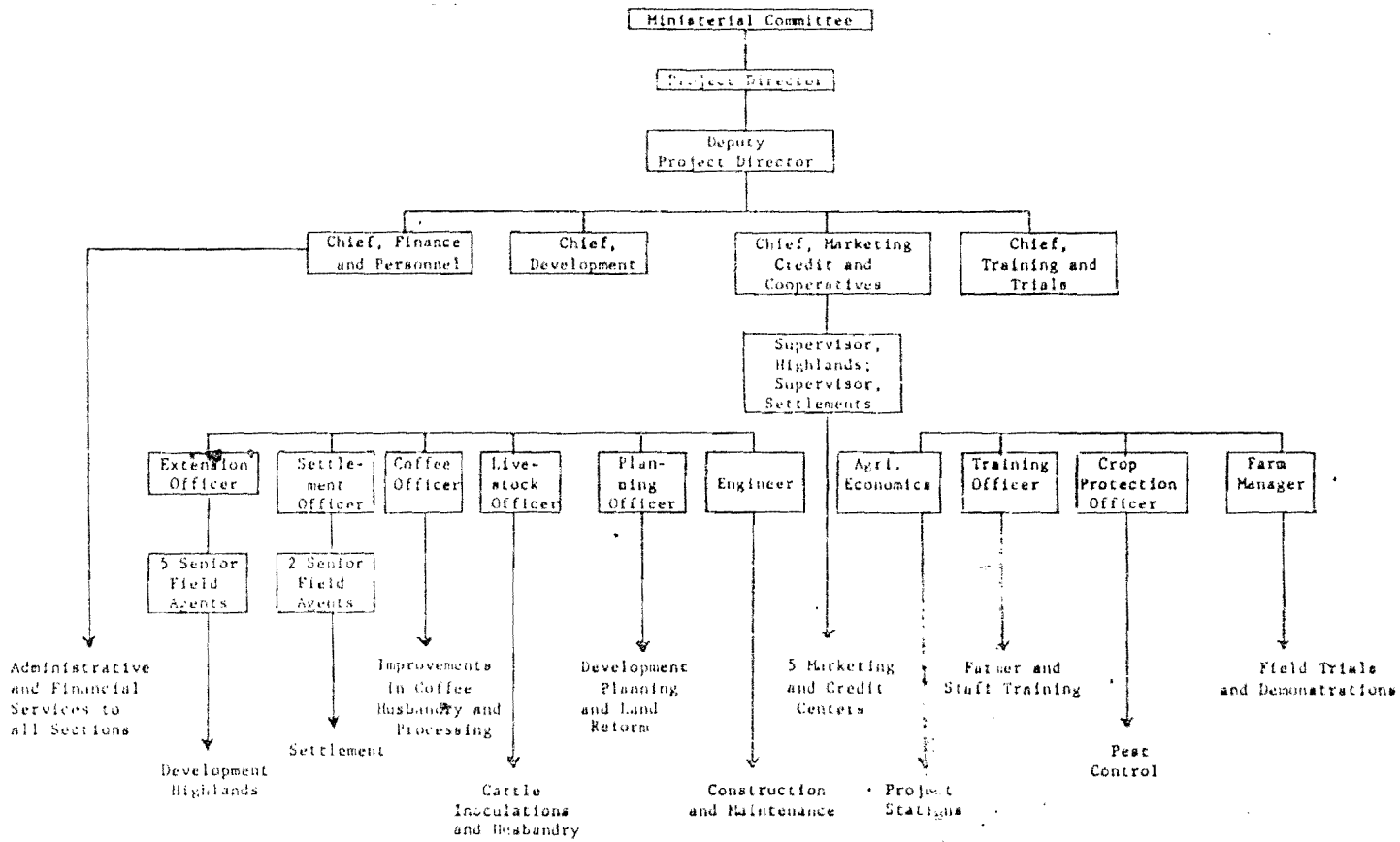

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Figure 6: ORGANIZATION OF WADU PROJECT, JULY 1971

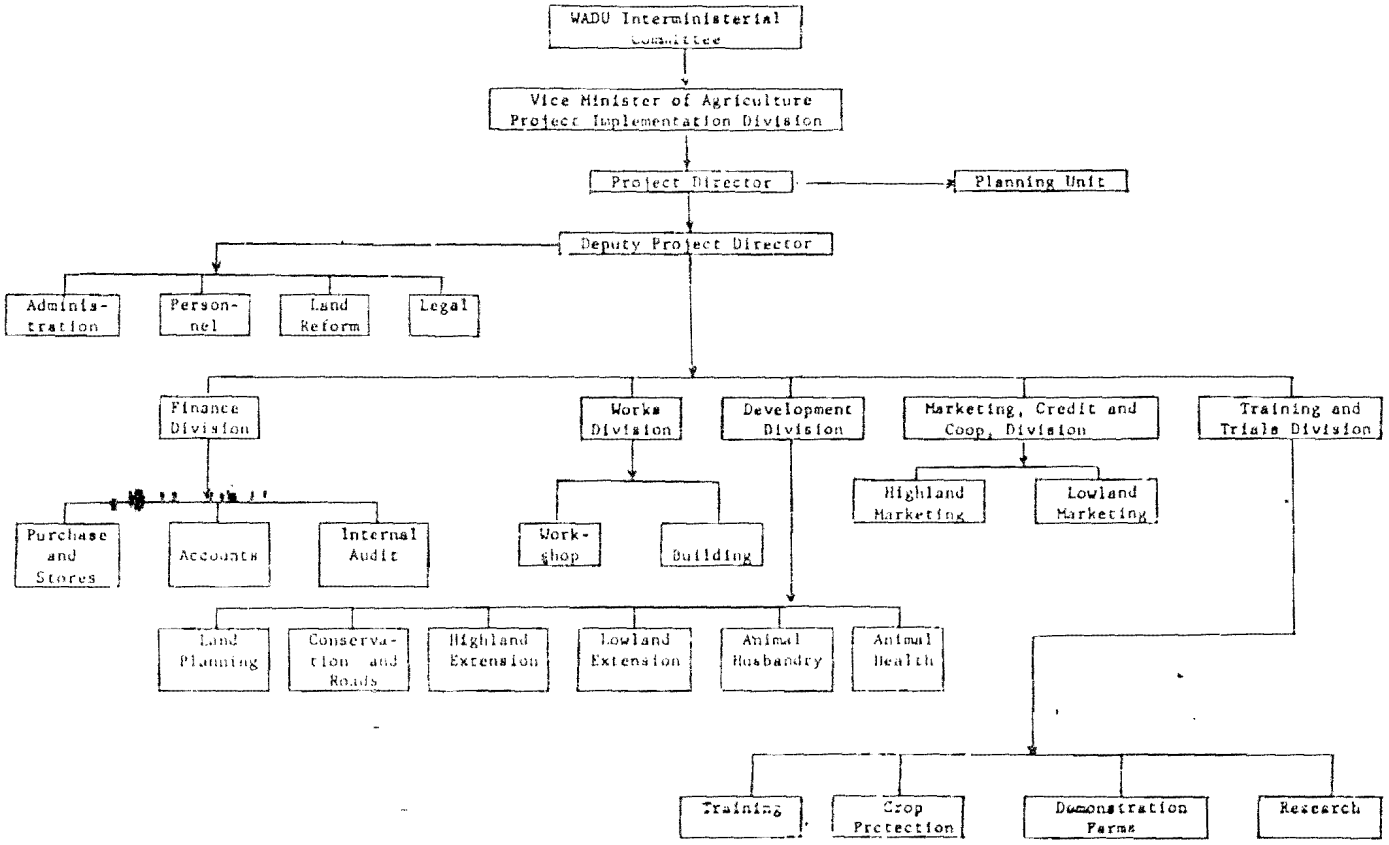
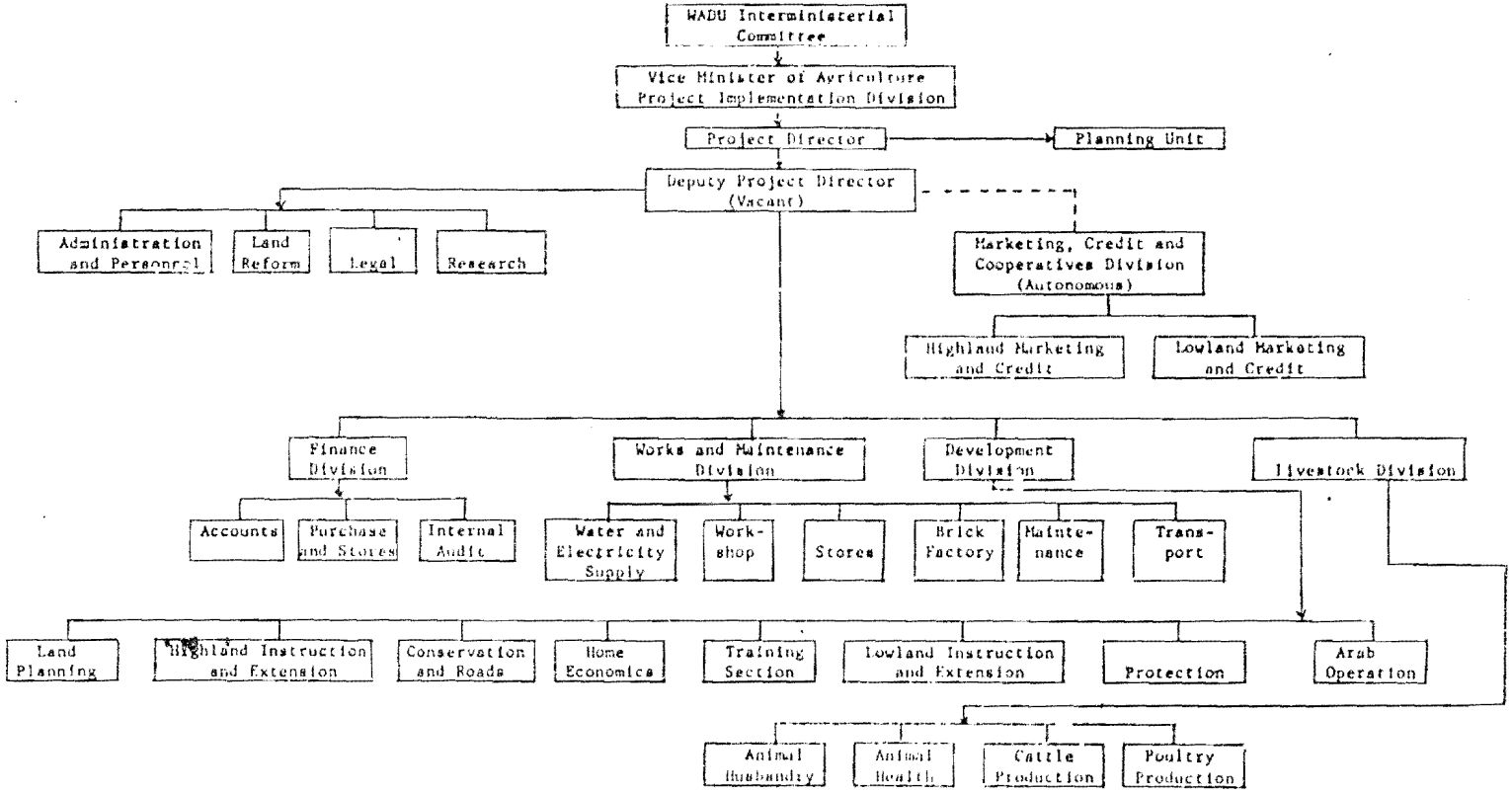


Figure 7: ORGANIZATION OF WADU PROJECT, OCTOBER 1972



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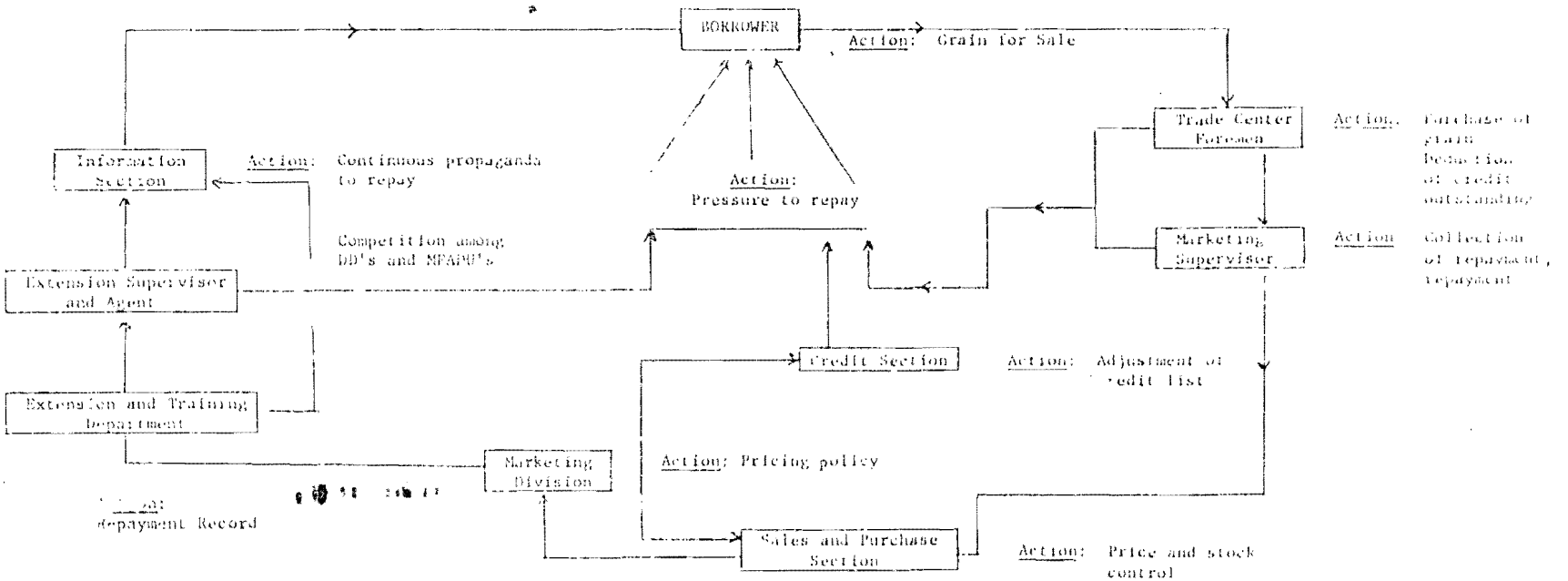
Page 1

Figure 8: CADU CREDIT SETTLEMENT SCHEME

DD = Development District
MFAMC = Model Farmer Area Development Committee



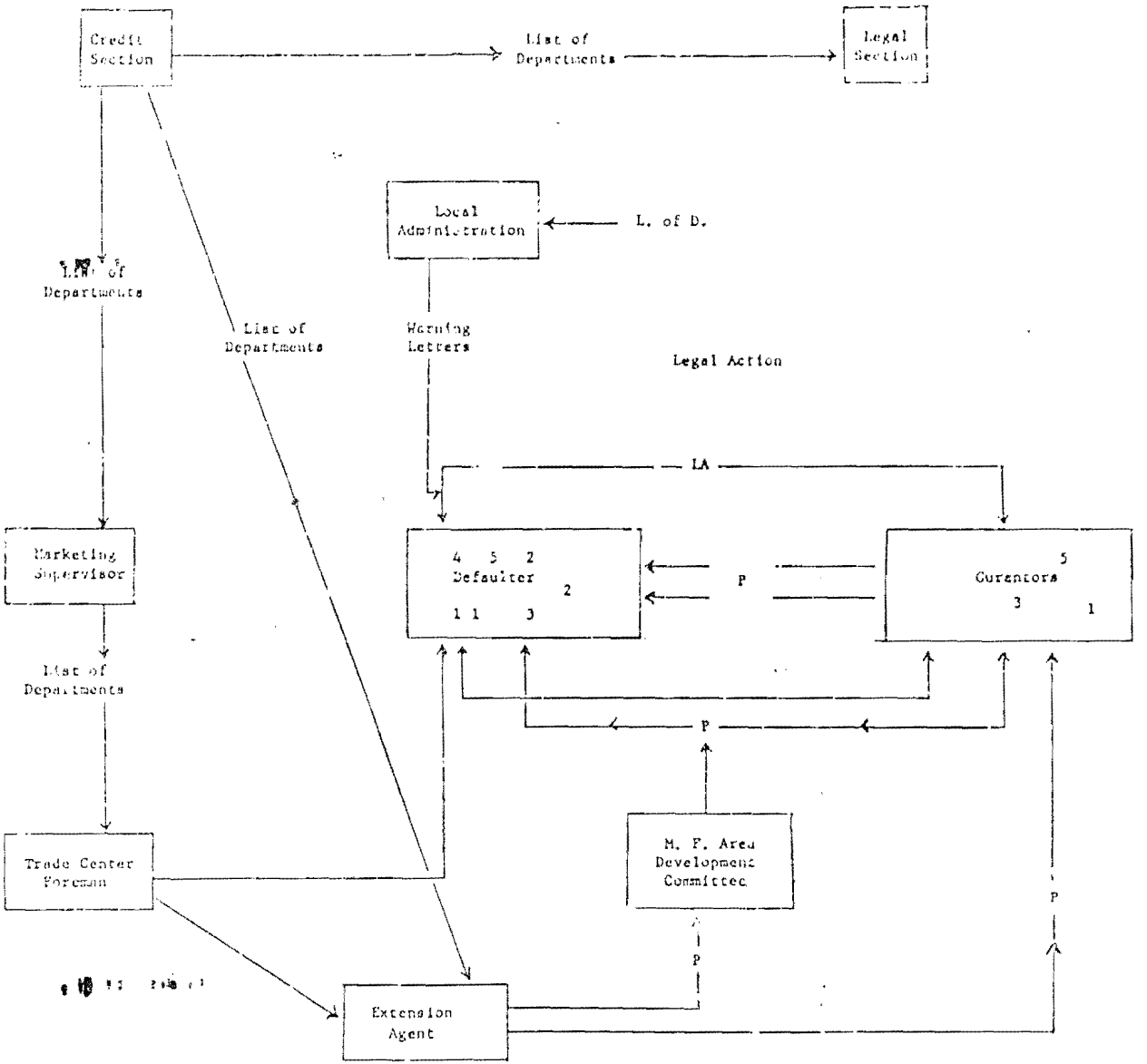
1 1 = Pressure from EA
and [illegible]

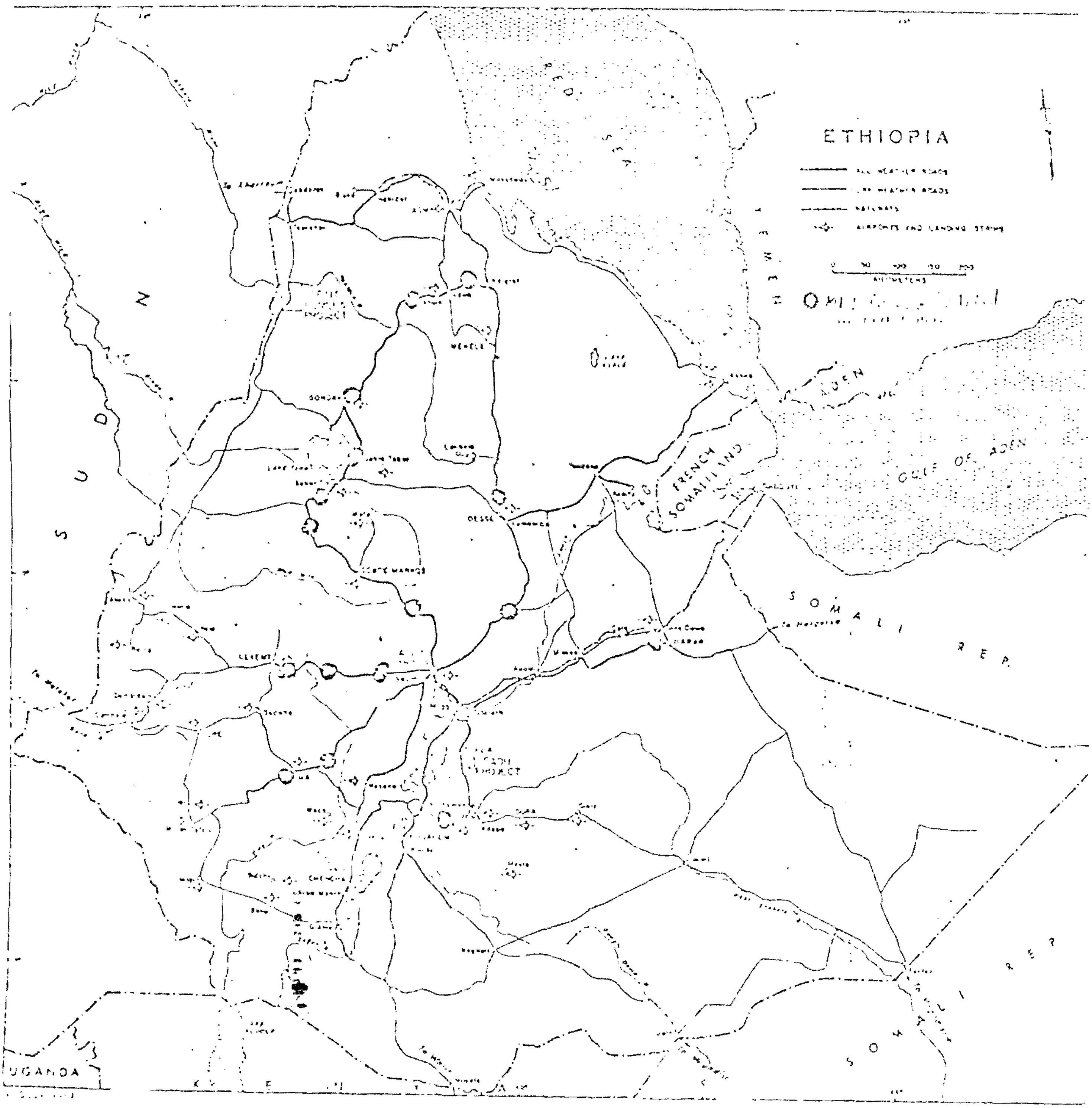
4 = Official pressure from local administration

community through MPADC

guarantors

5 = Legal action




ETHIOPIA
RED SEA
YEMEN
SUDAN
FRENCH SOMALILAND
GULF OF ADEN
ADEN
SOMALI REP.
SOMALI REP
UGANDA
KENYA
GONDAR
MEKELE
PROJECT

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