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AGENCY FOR INTERNATIONAL DEVELOPMENT
EAST AFRICA REGIONAL ECONOMIC DEVELOPMENT SERVICES OFFICE
NAIROBI, KENYA

THE MALAWI LAKE SHORE ROAD

PROJECT EVALUATION REPORT

JUNE 1974

612-22-211-153

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This is an internal A.I.D. report. While nothing in this report is classified, it does contain information which should be considered administratively privileged.

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LOAN AGREEMENT

Between

THE GOVERNMENT OF MALAWI

and

THE UNITED STATES OF AMERICA

for

LAKESHORE ROAD - PHASE II (CONSTRUCTION)

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Introduction

In June 1968 the Agency for International Development (AID) authorized a loan of \$7.0 million (later increased to \$8.2 million) to the Government of Malawi (GOM) to assist in (financing the construction of the Lake Shore Road.) The project consisted of two sections (Balaka-Salima, 90 miles, and Mua-Monkey Bay, 36 miles), and was to be completed in early 1971 at a total cost of \$8,750,000 (including contingencies) or a total of \$8,207,000 if constructed by force account. The route is indicated in the map attached as Annex A. The road was actually completed with gravel surfacing in November 1972 and is now being bituminized. The present work will be completed in August or September 1974, and will bring total project costs to approximately \$9.3 million, net of the residual value of equipment procured for the project.

This evaluation report was undertaken for two reasons. First, the road was constructed by GOM forces with management assistance from a U.S. construction contractor and construction supervision by a U.S. architectural/engineering consultant. Since this "modified" or "managed" force account approach is unusual and controversial for AID (although common in the U.S.), the Africa Bureau decided to assess its advantages and disadvantages and possible relevance to other road projects, in Malawi and elsewhere. Secondly, AID has been considering for some time how the Agency's evaluation procedures for non-capital projects should be applied to capital projects. This project had been cited as a good example of the importance of continuing evaluation in the case of traditional construction projects, due to the change of a major assumption affecting the project's economic benefits. (The GOM decided to rehabilitate the parallel Balaka-Salima railway, although the economic analysis assumed that the railway would be abandoned and all heavy traffic would use the Balaka-Salima road.) Consequently this report attempts to assess the impact of changing assumptions on the project's rationale and discusses some implications for project analysis and evaluation.

Section II below presents some background information on Malawi's economy, discusses the role of transport in Malawi's economic development and sketches the evaluation of the project design. Section III briefly reviews the implementation of the project and summarizes the findings on force account construction. The detailed analysis of the "managed force account" approach is contained in Annex B. Section IV analyzes the nature and incidence of project benefits as originally presented and as they now appear to be working out, and outlines a very preliminary retrospective benefit-cost analysis. The project "logical framework" is included as Annex C. Our conclusions and recommendations are presented in summary form in Section V.

The report was prepared on short notice on the basis of a fairly brief field visit and is therefore less comprehensive than it might otherwise be. Additional information would probably not change the conclusions.

concerning "managed force account" as a construction alternative, however. With respect to the economic analysis, the conclusions are necessarily preliminary and tentative in any case since the road was only opened in late 1972. The information needed to reach more definite conclusions will probably not be available for several years.

Although the first draft of the overall report including Annex B was prepared in May 1973, the final draft was not completed until June 1974. This has permitted the inclusion of fuller cost data, and has allowed the report to take into account some relevant recent developments.

Annex B was prepared primarily by Gordon Manly, a retired AID civil engineer with road construction experience (contract and force account) in both the private and public sectors; the remainder of the report was prepared by John Westley, REDSO/EA Economist. The report benefited from the generous co-operation of numerous individuals in Washington and Nairobi and in Malawi. The writers particularly wish to thank Mr. Stephen Whitmer of the Africa Bureau who acted as the AID/Washington co-ordinator, and Mr. James Farber, Deputy Chief of Mission of the U.S. Embassy in Blantyre who provided indispensable assistance during our short visit to Malawi.

II. Background

A. Economy of Malawi

Malawi is a small landlocked country in southern Africa with a population of about 5 million and a land area equivalent to that of the state of Indiana. The country extends roughly 700 miles north to south and 120 miles to west. Most of the eastern border is formed by Lake Malawi (previously Lake Nyasa), which itself is 365 miles long and averages 50 miles wide. The country consists largely of plateau 4,000 - 5,000 feet above sea level although there are mountainous areas in the north and south with altitudes up to 10,000 feet. Lake Malawi and its adjacent plains lie about 1,600 feet. Malawi (formerly Nyasaland) became independent in 1964.

Nearly 90 percent of the population derives its livelihood from agriculture which accounts for 50 percent of GNP and 95 percent of exports. The principal subsistence crops are cereals (mainly maize and pulses); the principal cash and export crops are tea, tobacco, cotton and peanuts. Smallholders produce nearly 90 percent of Malawi's agricultural output. Estates account for the remainder.

Malawi's growth performance since independence has been excellent. Although the growth rate fluctuates widely from year to year due to the influence of weather and agricultural output, GNP growth has averaged 7 percent per annum since 1964. However, per capita GNP is still below \$100 and Malawi is included among the UN's 25 least developed countries. Nearly one-third of the labor force of about 1.5 million is in paid employment, (including about 200,000 in South Africa). Information on income distribution is not available, but the high proportion of the labor force in paid employment and the widespread participation of smallholders in the monetary economy suggest that the distribution of income in Malawi may be less skewed than in many other countries in Africa.

The Government's development policies have concentrated on increasing production by smallholders, particularly through the establishment of several integrated rural development projects. These projects have been generally successful and already cover areas containing over 15 percent of Malawi's 900,000 farm families. The Government's Statement of Development Policies, 1971 - 1980 (DEVPOL) envisages continued concentration on increased output by smallholders with a slight acceleration of GNP growth to 8 percent per annum. This probably not unrealistic, although achievement of this rate of growth could be constrained by shortages of skilled manpower, inadequacy of domestic savings, and balance of payments problems. 1/

Malawi has been very successful at mobilizing external assistance, particularly from the IBRD, United Kingdom, Federal Republic of Germany and U.S. With the exception of several small manpower development projects, U.S. assistance has been entirely for road construction.

B. Transport Development in Malawi

Unlike Zambia and Southern Rhodesia, its former partners in the Central African Federation, Malawi had neither significant mineral resources nor a large white settler population, and consequently attracted the least interest of the three territories during the colonial period. Among other things, this left Malawi with relatively poor transport facilities at the time of independence. A railway provided service from the Mozambique port of Beira as far north as Salima, and operated lake services connecting with the railway at Chipoka (See map). The road system which was designed primarily as a feeder network for the lake-rail system was relatively extensive but built to generally low standards (only 200 miles of the 6,000-mile road system were asphalted.) In order to protect the railway's position, trucks were restricted to short hauls and low speeds. Improved roads were largely confined to the plateau areas, particularly the Blantyre - Zomba area in the south. Travel between various parts of the country was difficult, and travel along Lake Malawi was almost impossible. Roads from the plateau touched the southern and western shores of the lake at several points, but it was generally necessary to return to the plateau in order to reach another point on the lake by road.

The government of the immediate pre-independence period accorded high priority to improvement of Malawi's transport system as a means both to accelerate economic development and to foster national integration. It gave especially high priority to the construction of roads linking the lowland areas along the lake and requested U.S. assistance in studying the feasibility of a lakeshore road. AID provided grant financing for a transport sector study which was carried out by Surveys and Research Corporation of Washington DC (SRC). The field work was done in the period June 1963 to March 1964 and the final report, "National Transportation Plan for Nyasaland", was issued in June 1964.

The SRC sector study developed estimates of demand for transport services and inventoried transport facilities in Malawi as of 1963, as a basis for recommending a four-phase 25-year road improvement program and a series of improvements and further studies for road, rail, air and lake transport. With respect to the studies, SRC recommended that first priority be given to further investigation of the alternatives of extension of the railway from Salima to Lilongwe versus construction of a rail line to a new lake port at Monkey Bay, and to road-rail alternatives in the Balaka-Salima-Lilongwe triangle in general. The other recommended first priority studies were investigation of a line to the Mozambique railways at Nova Freixo to provide rail access to the port of Nacala, and feasibility studies of road projects to be undertaken by 1970. The road projects recommended for immediate consideration were the asphaltting of the road from Blantyre through Zomba, Liwonde and Balaka to Lilongwe and the Zambian border, and construction of portions of the Lake Shore Road, particularly from Karonga north to the Tanzania border, from Salima north to Nkotakota, and from Liwonde to Mangochi. SRC recommended that other road projects be undertaken over the period 1970-1980 based on further feasibility studies. 2/

The trunk road system included in the SRC recommendations begins at Bangula in the far south of Malawi, runs through Chikwawa, Blantyre and Zomba to Liwonde, then branches off into a highland road (running through Dedza and Lilongwe to Kasungu, Rumphu and finally Karonga and the Malawi - Tanzania border) and a lowland or lakeshore road (Balaka-Salima and Mangochi-Monkey Bay-Salima, then north to Nkotakota, Nkhata Bay and inland to join the highland road near Rumphu); the system connects with Zambia's Great East Road at Mchinji (See map).

Although SRC recommended that the major roads be constructed and improved in four phases over a 25-year period ended in 1988, most of the roads will be completed by 1977, the end of the SRC second phase. As of that date there will still be a gap in the north between Chilumba and Nkhata Bay and Chilumba and Kasungu, but the remainder of the system will have been completed and asphalt surfaced.

In order to accelerate the phasing of the road program recommended by SRC, Malawi devoted a very large portion of the development budget to transport (36 percent in the period 1964 - 1971) and relied heavily on financing by the IBRD (Zomba-Liwonde-Dedza-Lilongwe, Lilongwe-Kasungu), UK (Liwonde-Mangochi-Monkey Bay, Salima-Nkotakota-Nkhata Bay, FRG (Karonga-Chilumba) and U.S. In addition to the Lake Shore Road, AID has provided loans for construction of the 52-mile Chikwawa-Bangula road (\$8.3 million authorized June 1973, subsequently increased to \$10.3 million) and the 78-mile Lilongwe-Mchinji road (\$1.4 million, authorized June 1974). Of the three projects financed by AID, the Lake Shore Road represents the greatest acceleration of SRC's recommended phasing, while the Lilongwe-Mchinji road is well behind the SRC phasing and the Chikwawa-Bangula road is roughly on schedule. 3/

The railway studies recommended by SRC were undertaken during the 1960's and early 1970's. The Nacala connection was completed in 1969. There was initially some interest in developing a new southern lake port and abandoning the Balaka-Salima section, but the decision to move the capital from Zomba to Lilongwe made the extension of the railway to Lilongwe much more attractive. While both the AID financing for the Lake Shore Road (1968) and the IBRD financing for the Zomba-Lilongwe road (1965) were predicated to some extent on abandonment of the Balaka-Salima rail line, the Government had by 1970 received feasibility reports on both the rehabilitation of the Balaka-Salima line and the Salima-Lilongwe extension. A study completed by British consultants in 1972 concluded that the rehabilitation would not represent a significant mis-allocation of resources, but recommended further study of the Lilongwe extension. In early 1974 Malawi secured a Canadian loan for \$20 million for the extension, which is to be completed in 1977. The rehabilitation of the Balaka-Salima section is to be completed by 1976. Chipoka will remain the major southern lake port, and is being rehabilitated and expanded under IDA credit for the Karonga Project.

No transport sector study has been undertaken subsequent to the SRC 1964 study. The IBRD had planned to do an in-house transport sector survey for Malawi in 1973, but was apparently requested not to do so by the Government. Nevertheless, it appears that Malawi may have over-invested rather heavily in transport development thus far, particularly in building up duplicative high-standard road and rail facilities in the Balaka-Salima-Lilongwe triangle. (This will be discussed further in section IV below.) This has 'resolved' the major transport sector issue in Malawi, although many issues remain, including the construction of an international airport at Lilongwe, the timing of the completion of the basic trunk road system, and a number of general intersectoral and intrasectoral issues concerning investment priorities (e.g. rate of upgrading of the primary system versus rate of feeder road construction).

C. Lake Shore Road - Project Design

As noted above, the SRC transport sector study was issued in June 1964. Dr. Banda, then the Prime Minister of the pre-independence government, had requested U.S. support for a lakeshore road project during a visit to Washington in October, 1963, and repeated his request during a subsequent visit in December, 1964. Based on these requests and the results of the original study, AID agreed to finance a feasibility study of the project. The field work was performed by SRC in May, June and July, 1965; the final report was issued in March 1966. In June 1966 AID authorized a \$200,000 development loan to finance the final design work. The design contract was awarded to Tippetts-Abbett-McCarthy-Stratton of New York (TAMS) in May, 1967. Dr. Banda requested an AID loan for construction of the project in June 1967. AID authorized a \$7 million construction loan in June, 1968.

The following paragraphs trace the development of the projects as reflected in the two SRC reports and the two original Capital Assistance Papers, particularly with respect to project scope, standards, and benefits. Road standards and costs are discussed more fully in Section II, and the project economic analysis is discussed in greater detail in Section IV.

1. National Transportation Plan for Nyasaland (June 1964)

The original SRC report included recommendations for the phasing and standards of construction for the full Lakeshore Road (extending 477 miles from Liwonde in the south to Songwe at the Malawi-Tanzania border) as well as for the Lakeshore Road more narrowly defined (extending 281 miles from the vicinity of Balaka to Nkata Bay). 4/

There is relatively little discussion in the report of the criteria for determining the priority of the Lakeshore Road in general, or of the relative priority of the individual segments. Regarding the Balaka-Salima and Monkey Bay links, the report notes that, "The heavily populated corridor including Liwonde, Fort Jonston, Monkey Bay and Salima also needs a good highway . . . stage construction should be used to fully develop the corridor (which extends through Kota Kota and on to Bandawe and Nkata Bay)." 5/

With respect to the Balaka-Salima and Mua-Monkey Bay sections the report states the justification primarily in terms of tourism development, not agricultural development:

"The lakeshore route improvement would greatly facilitate the transport of farm products, promote additional agricultural development and open up Lake Nyasa to recreation and tourism. The importance of improving the southern section of this route (Balaka-Salima) for the latter purpose (i.e. tourism) justifies a somewhat higher standard of design on the portion south of Salima than further north. A connection to this portion of the lakeshore highway from Monkey Bay (Mua-Monkey Bay) is also proposed and included in the development road system. This connection is necessary to complete the access to the lake along the entire route and provide for optimum recreational and tourist use". 6/

With respect to construction methods, SRC recommends that the GOM move away from almost exclusive reliance on force account methods and engage construction contractors for all major projects involving high-standard roads. SRC maintains that the quality of construction is higher if done by contract and that costs will be roughly the same if all the costs of force account construction are taken into account. SRC's order of magnitude estimate of \$0.1 million for the construction of the Balaka-Salima and Mua-Monkey Bay sections (including the Balaka-Salima bituminization) assumed contract construction of the Balaka-Salima road and force account construction of the Monkey Bay link.

2. Economic and Engineering Survey of the Proposed Lakeshore Road, Malawi (March, 1966)

The SRC feasibility study of 1966 defined the Lakeshore Road as the 300-mile link from Balaka through Salima and Nkotakota to Nkata Bay, including the lateral connection between the Balaka-Salima segment and the Ft. Johnston (now Mangochi)-Monkey Bay road. The recommendations for the timing and standards of construction for the various segments are summarized in the following table:

<u>Road Section (Mileage)</u>	<u>First Stage (by 1970)- Type of Improvement</u>	<u>Second Stage (1970-1985) Type of Improvement</u>
Balaka-Salima (95)	Class II gravel	1-lane asphalt
Golomoti-Monkey Bay (38)	Class III gravel	-
Salima-Nkotakota (63)	Bridges only	Improvements
Nkotakota-Dwangwa (35)	Bridges only	Class III gravel
Dwangwa R.-Nkata Bay (78)	Bridges only	Class III gravel

The feasibility study assumes that the first stage construction would be completed by 1970, with the second stage construction following in the 1970-1985 period as the improvements become justified.

SRC provided two separate economic analyses for the project - one based on incremental regional income made possible by the construction of the roads and one based on road user savings for generated traffic; the first gives an upper limit for the benefit estimates and the second a lower limit. Both approaches assume other GOM regional development measures (principally aggressive agricultural development efforts and feeder road construction). Under both approaches the least attractive segments from a benefit-cost point of view were Dwangwa River-Nkata Bay and Balaka-Salima. SRC recommended that (a) the Dwangwa River-Nkata Bay section be dropped from any AID-financed project and be constructed to minimal standards by GOM forces, but that (b) the Balaka-Salima section be retained in the project due to its importance to the sections north of Salima. This recommendation assumed that the Balaka-Salima railway line would continue in service indefinitely. (According to the report, the continued existence of the railway line merely postponed the time at which bituminization of the road would be required.) In summary, SRC recommended that AID provide capital assistance

to undertake a project for engineering and construction of the Lakeshore Road sections from Balaka to the Dwangwa River (midway between Nkotakota and Nkata Bay), and a lateral from Golomoti [later shifted several miles northwards to Mua] to the Fort Johnston - Monkey Bay road. USAID should tender such assistance, keyed to the conditions that:

- (a) a regional agricultural development plan be completed within twelve months
- (b) construction of the Dwangwa River to Nkata Bay section of the Lakeshore Road be continued by the GOM
- (c) the Lakeshore Road development plans for the future be kept flexible to take account of the growth during the next few years, and that such a plan be revised within thirty-six months
- (d) the USAID and other road assistance projects be subject to negotiated re-scheduling or broadening of scope in light of the regional development plan when adopted. *L*

Although there is little explicit discussion in justification of the standard proposed, SRC apparently recommended Class II gravel for the Balaka-Salima section due to the relatively high projected traffic volumes (the GOM rule of thumb for upgrading from Class III to Class II at the time was 200 vehicles per day which SRC estimated the Balaka-Salima road would reach in about 1972). This would not explain the selection of Class II standards for

the Salima-Nkotakota section, but the report notes that the first half of the section (Salima-Benga) had already been constructed to Class II standards; and the GOM forces were designing the second half (Benga-Nkotakota) to Class II standards. The report recommends contract construction of the Balaka-Salima and Monkey Bay links, and force account construction of the other links, using contractors for bridge construction; it also recommends this latter approach as a practical alternative for the Balaka-Salima. The cost estimates are based on local contractor costs, and assume that force account construction is 25-35% cheaper than contract constructions. SRC points out that construction by U.S. contractors would probably increase costs by 25%. The cost estimate for the Balaka-Salima and Monkey Bay links (including second-stage bituminization for Balaka-Salima) was \$6.7 million.

3. Capital Assistance Paper: Malawi-Lake Shore Road - Phase I
(Engineering Services) (June, 1966)

The discussion in the 1966 Capital Assistance Paper (CAP) is confined to the two sections of road recommended by SRC for construction by contract, i.e., Balaka-Salima and the Monkey Bay link. The sections north of Salima are noted in passing and their completion is assumed in developing projections for transit traffic on the Balaka-Salima section, but there is no explicit mention of the status of the Salima-Nkata Bay sections and GOM plans for their completion.

The paper combines the benefit-estimation approaches of the SRC feasibility study into a single benefit-cost analysis which yields favorable benefit-cost ratios for both the Balaka-Salima section and the Monkey Bay link. Although the analysis depends heavily on projected increases in agricultural output both north and south of Salima, there is no assessment of the likelihood that the output increases will actually be achieved, or of the complementary GOM programs necessary to bring about the improvements. This is also true of the projected increases in fish marketings and tourist expenditures. The "transit traffic" projections assume the discontinuation of rail service on the Balaka-Salima line by 1970.

The standards proposed are somewhat higher than those recommended in the SRC feasibility study. Whereas SRC had recommended single-lane bridges for all sections, the 1966 CAP proposes two-lane bridges for the Balaka-Salima road and for spans under 40 feet in length on the Monkey Bay link. Moreover, the CAP proposes a 30-foot embankment rather than a 28-foot embankment to allow for the application of a 22-foot two-lane bituminous surface by 1980. (SRC had recommended a single-lane bituminous surfacing.)

The associated loan authorization, loan agreement and implementation letter include no conditions or reporting requirements beyond those normally required for engineering projects.

4. Capital Assistance Paper: Malawi: Lake Shore Road
(Phase II - Construction) (May, 1968)

The project scope as set forth in the 1968 CAP is identical to that in the 1966 CAP.

The economic analysis is also basically the same, although benefit calculations were adjusted upward based on new GOM projections of agricultural output. The internal rate of return (IRR) is estimated at 13.4% (none of the earlier analyses had included an estimate of the internal rate of return).

The 1968 CAP proposes somewhat higher road standards than those proposed in the 1966 CAP. For the Balaka-Salima section, the CAP proposes Class I standard with a 22-foot carriageway on a 38-foot embankment; for the Monkey Bay link, Class III standards with an 18-foot carriageway and a 30-foot embankment. The CAP notes the GOM's intent to apply a "sand seal coat" to both roads immediately upon completion; it estimates that the full paving of the Balaka-Salima road will take place in the early 1970s (rather than the late 1970s) and that paving of the Monkey Bay link will not be justified prior to 1985. The CAP also provides an extended discussion, including estimates, of the possibility of force account construction of both roads if the bids received from U.S. firms prove to be too high.

The Associated Loan Agreement includes no conditions precedent or covenants related to agricultural development, but does include the following covenant on feeder road construction:

Section 5.01. Feeder Roads. The Borrower agrees to furnish to A.I.D. within eighteen (18) months from the date of this Agreement, in form and substance satisfactory to A.I.D., plans and specifications of, and proposed financing and construction arrangements for an adequate system of feeder roads appurtenant to the Project. Borrower further agrees to cause construction of said system of feeder roads to be completed not more than eighteen (18) months after completion of the Project".

According to the CAP about 90 miles of feeder road would be constructed at a rate of 15 miles per year.

D. AID Evaluation Procedures

AID has required since 1971 that all non-capital projects be covered by AID's formal evaluation system. The main elements of the system are the "logical framework", which provides the conceptual context for project evaluation (and design) and the Project Appraisal Report (PAR), which provides a simplified standard format for reporting on the annual evaluation process. Thus far the Agency has not required evaluations for capital projects, annual or otherwise, although it has encouraged capital project evaluation. A "project completion report" is required of all capital projects, but it specifically excludes evaluative materials. Semi-annual evaluations of contractor performance are also required for capital projects, but their scope is of course limited.

The "logical framework" is, of course, applicable to any type of development activity. Simply stated, the logical framework " (1) Defines project inputs, outputs, purpose and goal in measurable or objectively verifiable terms; (2) Hypothesizes the causative linkage between outputs, purpose and goals; and (3) Establishes the indicators that will permit subsequent measurements or verification of achievements of the defined outputs, purpose, and goal. " ¹⁶ In the case of a road such as the Lake Shore Road the inputs are the construction and engineering services, the output is the road, the purpose is better access and lower transport costs and the goal is increased agricultural output. (See Annex C for Lake Shore Road project logical framework) The PAR format and worksheets are also applicable to all types of projects, although they were prepared specifically for technical assistance projects.

One reason for the delay in the requiring application of the project evaluation system to capital projects has been concern with the relevance of annual evaluation in the case of capital projects. Technical assistance projects by their nature are generally flexible and very dependent for their success on factors which may change very rapidly; they are in almost constant state of redesign. Traditional capital assistance projects, on the other hand, are designed very thoroughly but typically are "fixed" by the time project implementation (e.g. construction) begins. Even the most straightforward of construction projects probably have elements which may undergo redesign during the implementation process, or at least could benefit from relatively high-level attention to implementation problems on an annual basis.

The following discussion uses the logical framework (Annex C) as a point of reference, particularly in Section IV, Project Rationale. The scope and content of a possible AID capital project evaluation system is discussed further in Section V, Conclusions and Recommendations.

III. Project Implementation

A. Final Design and Construction

As noted above, a \$200,000 AID loan for the preparation of plans, specifications, bid documents and cost estimates for the Lakeshore Road was authorized in June, 1966 (A.I.D. Loan 612-H-001). The Loan Agreement was signed on August 18, 1966. A U.S. engineering firm (Kaiser Engineers) was selected following AID's normal procedures, but contract negotiations were not successful and were terminated in February, 1967. Subsequently the GOM selected Tippetts-Abbett-McCarthy-Stratton of New York (TAMS); the final design contract was signed on May 29, 1967. The final design work was completed on schedule in early 1968; the bid documents were released to prequalified U.S. contractors on April 15, 1968. There are no indications that TAMS' performance in carrying out the final design work was not fully adequate.

The \$7.0 million A.I.D. loan for Lakeshore Road construction was authorized in early June, 1968 (A.I.D. Loan 612-H-002). The loan amount was based on an estimated construction cost, including supervision and contingencies, of \$8,750,000, of which 80 percent was to be financed by A.I.D. Assuming immediate contract award the road was to be completed by November, 1970. Because the GOM was concerned that the project was not large enough to be attractive to U.S. construction firms and was alarmed by TAMS' initial cost estimates (over \$11 million), A.I.D. and the GOM agreed that force account construction would be considered if the low bid exceeded the final cost estimate of \$7.2 million (excluding supervision and contingencies). A.I.D. and the GOM estimated the cost of force account construction (including additional U.S. construction staff but excluding construction supervision and contingencies) at \$6.6 million and \$5.6 million, respectively. The GOM assumed that the road could be completed by force account as rapidly as by contract, i.e. in 30 months. A.I.D. assumed that force account construction would take one year longer or 42 months.

Bids from four prequalified U.S. contractors were received on June 5, 1968, and were all above the agreed ceiling of \$7.2 million and were thus rejected. The GOM initially considered negotiating a construction contract with the GOM furnishing some equipment and manpower in order to reduce costs. The GOM agreed in late 1968, however, to use a U.S. construction firm to supervise GOM forces as a construction management firm (CMF). The invitation for proposals for the CMF was issued in early 1969, but the contract with Nello Teer Co. of Durham, North Carolina (TEER) for construction management services was not executed until November 28, 1969. The contract between the GOM and TAMS for construction supervision services was signed on October 15, 1969.

TEER operating as the construction management firm was to manage the work in much the same fashion as a contractor under a unit price construction project, handling construction planning and scheduling, the procurement of equipment and materials, the recruitment of labor and direction of all construction operations. Major differences from normal contract construction were that the GOM was to make all payments for labor and for purchases made for the project, was to provide from its own forces about 25 percent of the average total labor force and was to provide some used construction equipment which it had on hand. Also equipment and materials purchases for the project had to be made on a competitive basis following A.I.D. guidelines, whereas TEER operating as a construction firm would have been able to procure equipment and materials on a negotiated basis with minimal restrictions.

The U.S. employees of TAMS and TEER arrived in February 1970. The Notice to Proceed was issued to TEER by the GOM on March 15, 1970, fixing the completion date of the 32-month construction period as November 15, 1972. None of the U.S. construction equipment arrived on site until after the first construction season of April - November 1970, with the result that construction was only 15 percent complete as of the end of 1970. With U.S. equipment in hand at the beginning of the 1971, progress during the second construction season was much faster, reaching approximately 45 percent by November 30, 1971. However, by that time 64 percent of the allotted construction period had elapsed. To accelerate progress in 1972, the construction equipment fleet was expanded by rental of machines from the GOM Plant and Vehicle Hire Organization (PVHO) and TEER was authorized to increase his on-site crew of Americans from 10 to 14 men. Because of anticipated overruns in construction costs the amount of the A.I.D. loan was increased to \$8.2 million by an amendment authorized in June 1972; the Loan Agreement amendment was executed on August 25, 1972.

Construction was completed by November 15, 1972 except for the application of a seal coat of bitumen and stone chips on the road surface. This work was originally included in TEER's construction management contract, but it was decided to delete it from TEER's contract and to place the seal coat with GOM forces during the 1973 construction season. All of the American employees of TAMS and TEER had left the site by November 30, 1972. Work on the seal coat began in late April, 1973, and all but 15 miles was completed by November, 1973. The remainder during the 1974 construction season, probably by the end of August.

The performance of TAMS and TEER appears to have been generally adequate. There were some difficulties concerning the relationship between TAMS and TEER, and TEER was criticized at several times by both TAMS and the GOM for poor control of the work force, but these problems probably had to do largely with the fact that TEER was operating as a construction management firm supervising GOM forces, and not as a construction contractor.

With respect to the success of the "modified force account" or "managed force account" construction approach, it should be noted that the construction work is of good quality and that the road will be completed (generally on schedule) at a cost below that of contract construction. (The cost aspect is discussed further in the following section.) The major drawback was the

greater management and administrative burden on the GOM Ministry of Works and Supplies (MWS), due to the problems of administering the GOM input, coordinating the three parties involved (TAMS, TEER, GOM forces), and carrying out offshore procurement and local cost financing according to A.I.D. procedures. These management and administrative costs are offset to some extent by the lower financial costs of modified force account construction, and by the additional training this approach afforded to MWS employees. Moreover, both the management costs and the final costs could have been lower had the functions of TAMS and TEER been combined in one firm (as they were in a smaller project carried out by managed force account in Malawi during the same period with U.K. assistance; (See further discussion in Annex B). However, the MWS has concluded, based on its experience with the Lakeshore Road project, that future major road construction should be carried out by standard contract construction methods. In effect, the MWS has decided that management and administrative capacity, particularly given the virtual impossibility of hiring additional non-Malawian staff, is a more binding constraint than the financial resource constraint.

B. Design Standards and Project Costs

The construction cost figures for the Balaka-Salima and Mua-Monkey Bay roads gradually escalated over a ten-year period from a total of about \$3.6 million (the SRC estimate in 1964, excluding bituminization to \$9.3 million (the probable final cost upon completion of the remaining bituminization in mid-1974)). Cost escalation over the ten-year period was a function, of course, of both inflation and rising design standards, although it is difficult to measure the precise respective contributions of the two factors.

Design standards for the two road sections were raised in several steps from those originally recommended by SRC as shown in the following table:

Table 1: Lakeshore Road Design Standards, 1964-1974

<u>Balaka - Salima (90 miles)</u>				
<u>Report and Period</u>	<u>Width of Surfacing (feet)</u>	<u>Embankment (feet)</u>	<u>Bridge Width (feet)</u>	<u>Type of Surfacing</u>
SRC Report (1964, 1966)	20	28	10	Gravel
Phase I CAP (1966)	20	30	24	Gravel
Phase II CAP (1968)	22	38	24	Bitumen
Construction (1970-71)	22	38	24	Bitumen
Construction (1972)	22	32	24	Bitumen

<u>Mua - Monkey Bay (36 miles)</u>				
<u>Report and Period</u>	<u>Width of Surfacing (feet)</u>	<u>Embankment (feet)</u>	<u>Bridge Width (feet)</u>	<u>Type of Surfacing</u>
SRC Report (1964, 1966)	18	24	10	Gravel
Phase I CAP (1966)	18	24	10	Gravel
Phase II CAP (1968)	18	30	24	Gravel
Construction (1970-71)	18	30	24	Bitumen
Construction (1972)	18	24	24	Bitumen

As is clear from the table, the major upgrading in the design standards took place between the completion of the SRC feasibility study and the completion of the final design work by TAMS (which coincided with the Phase II CAP). The increase in width of bridges for the Balaka-Salima road was based on safety considerations, while the increase in the width of surfacing represents its designation as a Class I road (22-foot carriageway) rather than a Class II road (20-foot carriageway); the decision to include minimum-standard bituminization represents a similar upgrading from secondary to primary road status. The Mua-Monkey Bay road retained its original Class III designation (18-foot carriageway) but was provided with two-lane rather than one-lane bridges; the decision to bituminize came after 1968. (the Phase II CAP had noted that bituminization of the Monkey Bay section would not be justified until 1980 or later). In 1972, the embankment width for both roads was reduced (to roughly the width originally recommended by SRC) in an effort to offset cost escalations which took place during construction.

Design standards are almost always a subject of dispute in road construction projects, with the recipient - country representatives pushing standards up as far as possible to permit construction of a wide, hard-surfaced road with low initial maintenance requirements, and the consultants and donor agencies attempting to hold standards to what can be supported by economic benefits. The upward creep of the design standards indicates that the former group was perhaps more successful than the latter group in the case of the Lake Shore Road project.

The rising design standards combined with general price increases were reflected in steady increases in the cost figures for the Lake Shore Road.

Table 2: Lake Shore Road Total Construction Costs, 1964 -1974 (million dollars)

<u>Report and Period</u>	<u>Construction By Contractor</u>	<u>Construction by Force Account</u>	<u>Including Bituminization</u>
SRC (1964)	3.575	-	6.124 ^{8/}
SRC (1966)	4.653	-	6.558 ^{9/}
Phase I CAP (1966)	7.000	5.600 ^{10/}	-
Phase II CAP (1968)	8.750	8.207	9.020 ^{11/}
Amendment CAP (1972)	-	-	9.884 ^{12/}
Annex B (1973)	-	-	9.696
Annex B (Net of residual equipment value)			8.672
GOM Estimate (1974)	-	-	10.400
GOM Estimate (Net of residual equipment value)			9.300

The cost estimates reflect the substantial increase in standards which took place between the submission of the SRC feasibility study in early 1966 and the completion of the Phase II CAP in mid-1968. Estimates are available for the cost of some of the design changes. The Phase I CAP, for example, notes that the widening of the longer bridges from one-lane to two-lane (10-feet to 24 feet) for the Balaka-Salima section increased costs by about \$750,000, while the widening of the embankment from 28 to 30 feet added almost \$350,000. The increase in the width of surfacing and embankment following the increase in costs in the Phase II CAP, although the cost increases were not specified. The Balaka-Salima bituminization is included in the Phase I CAP estimates at only \$270,000, but this covered material costs only and clearly understates the cost of bituminization.

The estimated final construction cost (not including final design) is derived from the GOM's estimate of its budgeted expenditures for the Lakeshore Road through completion in August or September 1974 (about \$2.4 million), plus the estimated total disbursements from the Phase II A.I.D. Loan (\$8.0 million, including \$1.7 million in local costs and \$6.3 million in foreign exchange costs.^{14/}) Since the equipment purchased for the project remains the property of the GOM (rather than the property of the contractor as in the case of contract construction), the residual value of the equipment must be netted out to arrive at the actual road construction costs. The residual value is estimated in Annex B at \$1,024,000, but this has been increased slightly to \$1.1 million to take into account subsequent spare parts procurement. This gives a total construction cost of \$9.3 million (\$9.5 million if the cost of final design is included), or about \$75,000 per mile.^{15/}

The comparison between the cost of construction by managed force account and cost of construction by construction contractor requires several adjustments to both the final actual construction cost and the bids submitted by contractors in 1968. Most of the adjustments require estimates based on various assumptions, so the cost comparison can only be fairly rough. Based on the Annex B calculations of May 1973, it appears that the managed force account approach resulted in construction costs 5 percent to 20 percent below what they would have been under contract construction. Although the present estimate of final construction costs is somewhat higher than the Annex B estimate, this is primarily due to the increased cost of the bituminization; since this was excluded from the comparison, the Annex B results are not significantly affected.

IV. Project Rationale

A. Logical Framework

The standard "logical framework" consists of a 4 x 4 matrix. The four rows cover the sectoral or program goal, project purpose, project outputs and project inputs; the four columns provide for a narrative statement of the above, a quantified statement, a statement of relevant assumptions, and a listing of data sources. The basic logical framework has been modified in several directions. One of the modifications, designed specifically for capital projects, leaves out the inputs level and the data column, but adds two columns to permit comparison of the original plan with current status in terms of assumptions and actual outcome, and explicitly includes incidence of benefits (employment, income distribution, social equity, etc). The capital projects logical framework filled out for the Lake Shore Road project is included as Annex C.

The statement of the project goals and purposes in Annex C is somewhat involved, since the ultimate project benefits (program goals) included increased agricultural output, fish production and tourism earnings, while the proximate benefits (project purposes) included both physical access and reduced road user costs. The benefit-cost analyses quantified all of the above in relating project benefits (goal and purpose level) to costs (inputs and outputs level). There was little explicit discussion of the incidence of project benefits, although of course the project area is one of small-scale farming and fishing. The "planning assumptions" column is particularly interesting, since it brings out the key role of certain assumptions and permits easy comparison with the current status of those assumptions (e.g. railway abandonment). The final column permits an estimate of the actual output and equity impact of the project as far as it can be discerned at this early date, and provides the skeleton framework for a preliminary benefit-cost analysis.

In terms of Annex C the discussion of project implementation above dealt with the relationship between inputs and outputs (i.e. construction methods, standards and costs) and planned versus ^{actual} progress. The following sections will first analyze the planned and prospective project benefits with respect to "progress" at the goal and purpose levels, including the impact of changes relative to the original assumptions. The "incidence of benefits" at the purpose and goal level will be discussed next, and the final section will discuss the basis for a preliminary retrospective benefit-cost analysis.

B. Project Benefits

The economic benefits of road construction or improvement projects have traditionally been considered primarily in terms of savings in operating costs for road users. Assuming a high degree of competition in the road transport industry, these cost savings are passed on to ~~producers~~ and consumers in the form of rate reductions which releases resources for use elsewhere in the economy. Generally at least three categories of road using savings have to be distinguished - savings accruing to the normal users of the road ("normal

traffic"), savings accruing to road users diverted from other routes or transport modes ("diverted traffic"), and savings accruing to road users who would not have used road transport at all without the road improvement ("generated traffic"). In the case of an area with little or no "normal" traffic, all or nearly all of the traffic on a new road will be "generated". If the purpose of the road is to open up an area for agricultural development, road user savings for generated traffic may reflect only a portion of total benefits accruing, since in this situation the benefit consists of the net value of the increased agricultural production or incremental income generated. Since other investments will be required to realize the production gains, the proper approach in this case is to relate the total benefits to the total resources invested to gain the benefits. ^{19/}

The problem this approach raises is that there is no way to evaluate the extent to which the benefits depend on the road investment itself, as opposed to other investments, i.e., there is no correct way to allocate the joint benefits to the individual cost components. This implies that there is no unique level of benefits associated with the costs of the road improvement; thus the level of benefits cannot be used to determine the optimum road standards based on a series of alternative standards and costs. The two major options in this case are to retain the benefit-cost format by arbitrarily assigning benefits to the various cost components (e.g. in the proportion as the road costs to other costs), or to give up the benefit-cost format and take a cost-effectiveness approach by finding the least-cost alternative for the transport problem involved (e.g. the least-cost method of providing all-weather access in a particular area, given the climatic and topographic conditions, etc.) In analyzing the Lake Shore Road project, both the consultants and AID chose to retain the benefit-cost format, and gave relatively little attention to possible alternative road standards and costs for the Balaka-Salima and Monkey Bay sections. Both analyses, however, correctly distinguished the traditional road user savings approach from the "incremental income" approach. As noted in Section II.C above, the SRC feasibility study uses the road user savings analysis (based on generated traffic) to derive a lower limit and the incremental income approach to derive an upper limit for estimated project benefits. The CAPs take a somewhat different approach, combining road user savings for normal and diverted traffic with incremental income in a single benefit-cost analysis. For purposes of the discussion, we will separate the two approaches and discuss road user savings and traffic estimates first (benefits at the "purpose" level) and incremental income and output (benefits at the goal level) second. The question of the Balaka-Salima railway rehabilitation deals with assumptions concerning traffic diversion from rail to road (or vice versa) and belongs with the discussion of the road user savings approach. In view of its importance, however, we treat it separately following the discussion of the road user savings approach.

1. Traffic Estimates and Road User Savings

The SRC feasibility study had covered the whole Balaka-Salima-Nkotakota-Nkhata Bay area and had treated all traffic as generated traffic. Since road user savings for generated traffic and incremental regional income are not additive (the former presumably being included in the latter), this

required that the road user savings and incremental income approaches be presented as discrete, mutually-exclusive analyses. The CAPs, on the other hand, confined the analysis to the Balaka-Salima-Monkey Bay area and were thus able to treat the transit traffic generated by development north of Salima as a type of normal traffic. This permitted adding the road user savings for the transit traffic (and for "existing" traffic) to incremental income (in the Balaka-Salima-Monkey Bay area) to derive a combined estimate of benefits. Although this is superficially a correct procedure it appears to involve "borrowing" benefits which would normally have been included in an incremental income analysis of development in the Salima-Nkotakota-Nkhata Bay area.

It is interesting to compare the traffic estimates in the feasibility study and the CAPs. The traffic estimates are based on transport requirements for tonnages of outputs and related input tonnages. Difference in the estimates thus reflect differing assumptions regarding incremental output, which will be discussed further below. The differences also reflect differing assumptions regarding the railway rehabilitation, which we will also discuss in greater detail below. The traffic projections are of interest at this point primarily as indices of the differences in the analyses and as tentative indicators (since we have both later traffic projections and some preliminary traffic counts for the Lake Shore Road) of the extent to which project benefits may have been overstated.

	Average		
	Initial Year	1975	1985
<u>Balaka-Salima</u>			
SRC Feasibility Study	150 (1970)	260	380
Phase I CAP (1966)	188 (1970)	300	426
Phase II CAP (1968)	209 (1972)	329	474
BAM I ^{20/}	8 (1974)	10	43
BAM II	8 (1974)	26	66
Actual (Balaka-Mua) ^{21/}	75 (1973)	-	-
Actual (Mua-Salima)	45 (1973)	-	-
<u>Mua-Monkey Bay</u>			
SRC Feasibility Study	40 (1970)	95	140
Phase I CAP (1966)	42 (1970)	99	146
Phase II CAP (1968)	40 (1972)	81	128
Actual	32 (1973)	-	-

The figures for Mua-Monkey Bay are relatively consistent and require no comment. The differences between the feasibility study figures and those in the Phase I CAP for the Balaka-Salima section are impossible to evaluate, since the Phase I CAP does not explicitly show the derivation of traffic figures from tonnages. The higher projections in the Phase II CAP reflect more optimistic assumptions concerning agricultural output, based on updated figures prepared by the GOM in 1968. The more interesting differences are those between the CAP figures and both the British Appraisal Mission (BAM) figures and the actual figures. The BAM traffic projections are derived from GOM figures for all exports and imports north of Dedza in Malawi. They assume that all export and import traffic will be carried by heavy trucks or rail, that light trucks and automobiles will account for about 2.3 times heavy truck traffic in terms of average annual daily traffic (AADT), and that exports and imports for areas north of Salima will go by lake steamer via the port of Chipoka. The BAM report further assumes that the railway will account for a declining percentage of the relevant traffic, even if rehabilitated (90 percent in 1971, 60 percent in 1980, and thereafter). The BAM projections are startlingly low, both with the railway (BAM I) and especially without (BAM II). They are based on less optimistic projections for cash crop output in the lakeshore area, and probably underestimate the ratio of light to heavy traffic, but this would not seem to explain the vast differences in the projections. In any case, they illustrate the extent to which such projections can differ.

The "actuals" shown in the table are based on traffic counts taken over a two-week period in January. They are overstated to the extent that they include government vehicles (such as those travelling to the construction camp at Ntakataka or the crusher site on the Monkey Bay Road), but this may be offset by seasonal adjustment (traffic peaks in the June-November period, and January traffic levels could be as little as 50-60 percent of the average annual level). No origin or destination data was available from the Ministry of Works and Supplies but such information may be included in a new traffic survey program recently initiated by the GOM National Statistical Office. The actuals are of course inconclusive, although they suggest that actual traffic may fall far below the SRC and CAP projections, if still above the BAM projections.

As regards the road user costs used as the basis for road user savings, the figures used in the CAPs were based on 1964 data and thus vary considerably from current estimates of road user costs, particularly in view of the recent increase in oil prices. This will be taken into account in the discussion of a retrospective benefit-cost analysis below.

2. Rehabilitation of the Balaka-Salima Railway Line

The original SRC survey did not discuss the possibility of abandonment of the Balaka-Salima railway line, although it called for a thorough study of the road/rail alternatives prior to any decision to extend the rail line further to Lilongwe. The second SRC study assumed that the Balaka-Salima rail line would remain, but that rehabilitation would be uneconomic and thus most new traffic:

would be diverted to roads. By the time the CAPs were prepared, it appeared that the GOM had agreed to abandon the Balaka-Salima line, under pressure from the IBRD (continuation of the Balaka-Salima line would result in large amounts of heavy traffic between Lilongwe and southern Malawi being routed via Salima rather than over the IDA-financed Zomba-Lilongwe asphalt road).^{22/} This was confirmed by the Branham updating of the SRC feasibility study; Branham assumed abandonment of the Balaka-Salima line between 1970 and 1975, and the shifting of the major southern lake port from Chipoka to Liwonde.

Subsequently, however, the GOM engaged KAMPSAX, a Danish consultant, to study the Balaka-Salima rehabilitation and the extension of the railway to Lilongwe. The reports were completed in 1970, following which the GOM prepared its own study proposing rehabilitation of the Balaka-Salima line. Based on these studies, Malawi Railways actually rehabilitated ten miles of line north of Balaka through improved ballasting and replacement of 40-pound rail with 60-pound rail. In connection with a GOM request for U.K. budgetary support for the rehabilitation, ODA financed a further study of the question. The ODA British Appraisal Mission report, (or report "Bonney Report") was completed in early 1972 and concluded that rehabilitation would not represent a significant misallocation of resources. The GOM presently plans to complete the 96-mile rehabilitation with its own funds in three years, proceeding at a rate of 30 miles in 1973/74, 30 miles in 1974/75, and 36 miles in 1975/76. Moreover, construction of an 86-mile extension to Lilongwe has now begun, financed by a \$20 million - Canadian credit extended in early 1974 and a \$2.3 million grant; the extension is scheduled for completion in 1978.^{78/} Finally, Chipoka is to be improved as the major southern lake port in conjunction with the IDA-financed Karonga Project (the IDA credit provides \$450,000 for improved wharf, handling and storage facilities at Chipoka).

In retrospect, it appears that once the decision was made to shift the capital from Zomba to Lilongwe it was almost certain that the GOM would try to revive the old proposal for extension of the railway to Lilongwe, which of course requires rehabilitation of the Balaka-Salima line. Since no clear assurances had been received from the GOM on the subject, the benefit-cost calculations probably should have allowed for the possibility of railway rehabilitation through the use of sensitivity analysis. Had this been done, however, it would not necessarily have had a significant effect on the outcome of the analysis as it was set up since the traffic assumed to be affected by the railway decision accounted for only a small portion of total projected traffic, and road user savings in turn accounted for only about 20 percent of projected benefits.^{23/} Such an analysis may, however, have affected the choice of road standards, since it appears that the increased traffic anticipated as a result of abandonment of the Balaka-Salima rail line provided the basis for building the road to Class I rather than Class II standards (at an increase in estimated construction costs of 40 percent for that section) as well as early bituminization.^{24/}

3. Incremental Output and Incomes

Both of the SRC reports and both of the CAPs stress that the primary purpose of constructing the Lake Shore Road is incremental agricultural output, or "regional development". The SRC ~~feasibility study~~ does not include any estimates for incremental regional output and income, but puts the entire Lake Shore Road in the special category of "development road". The SRC feasibility study emphasizes that the incremental income approach to benefit analysis represents the purpose as well as the impact of the road more accurately than the road user savings approach. While the CAPs combine both approaches in one analysis, incremental income accounts for the bulk of estimated benefits (80 percent in the case of the Phase II CAP).

The above documents also stress that all-weather road access is a major prerequisite to accelerated development of the lakeshore areas but cannot by itself bring about development. Complementary investment is required in agricultural extension, credit, marketing, feeder road construction, tourism development, etc.

The following table indicates the magnitudes of incremental output and income projected in the SRC feasibility study and the CAPs, on the assumption that the necessary complementary investment would be forthcoming. The major source of incremental income identified were increased agricultural output, fish marketings and tourist expenditures. Cotton is the major cash crop and is taken as representative of the other crops.

Table 4: Incremental Income and Output - Balaka, Salima, Monkey Bay Area

	<u>1970</u>	<u>1975</u>	<u>1985</u>
Regional Income (\$000)			
SRC Feasibility Study	28	640	990
Phase I CAP (1966)	412	714	1,027
Phase II CAP (1968)	657 (1972)	930	1,897
Cotton Output (tons)			
SRC Feasibility Study	900	2,250	2,850
Phase I CAP (1966)	1,350	1,950	3,500
Phase II CAP (1968)	1,340 (1972)	3,120	5,780
Fish Marketings (tons)			
SRC Feasibility Study	100	100	300
Phase I CAP (1966)	150	350	500
Tourist Expenditures (\$000)			
SRC, Phase I CAP (1966)	53	103	210

The major differences in the projections consist in the much higher incremental agricultural output and incremental regional income figures used in the Phase II CAP. Both the incremental cotton output and incremental regional income projections in the Phase II CAP are nearly double what they were in the SRC feasibility study and the Phase I CAP. These increases were based on updated figures compiled by Prof. Arthur Branham, who was acting as Transport Advisor to the GOM and had earlier been the team leader for the SRC transportation sector study. Branham's updating of the SRC data was in turn based on a GOM publication entitled Malawi Crop Potentials, 1965-1985, which projected substantially higher cash crop output for the Balaka-Salima area (by a ratio of 2.5 : 1) and lower surpluses for the Monkey Bay area (half the SRC projections).

It is as yet far too early to tell which set of projections is likely to be more correct. There is some information available, however, due to the establishment in the central lakeshore area of one of Malawi's four integrated rural development projects. This project, the Central Region Lakeshore Development Project, or "Salima Project", was initiated in 1968 with loan and grant assistance from Western Germany (FRG). The FRG has made available about \$ 8 million (\$5.2 million grant, \$2.3 million loan, \$0.4 million counterpart funds) for the period 1968-1972 (Phase I) and 1972-1975 (Phase II), and the GOM is committed to a contribution of about \$1 million. The project area covers the lakeshore plain from below Golomoti in the south to just below Nkotakota in the north, with the project headquarters at Salima. In terms of the areas of influence of the A.I.D. Lake Shore Road, the Salima Project area covers the western half of the Monkey Bay area and the northern two-thirds of the Balaka-Salima area.

There has been no feasibility study or appraisal report on the Salima Project as such. The GOM planned to carry out a full feasibility study beginning in mid-1973, while the FRG was to begin a comprehensive evaluation of the project in late 1973. Both of these exercises are in preparation for GOM/FRG negotiations in 1974 concerning the development of the project in Phase III (post-FY 1975). Both of these studies should be completed by mid-1974 and will provide a detailed survey of progress thus far as well as projected development over the next 10-20 years ^{25/}

The project scope includes health, community development, rural industry, feeder road construction and water development as well as research, extension services, provision of inputs on credit, and settlement. Cash crop marketings have increased from an average of \$340,000 per annum in 1965-68 to \$700,000 in 1971/72; cotton production has increased from 2,500 tons to 4,100 tons over the same period. Interestingly enough, cotton production has actually declined in the area south of Salima. The Project Annual Report for 1971 notes that:

The reason for this decline in the southern areas can be seen in the poor road communication which did not yet allow the Project to carry out its activities with the required density and intensity. As a result farmers are not yet aware of the benefits of the Project to the same degree as in the north. These problems will most be overcome after completion of the Lake Shore Road in 1975. ^{26/}

In discussions at the Salima Project headquarters, project officials pointed out

that the major problem in reaching the area south of Salima had been the bridge over the Lintipe River, which generally washed out at the beginning of each rainy season; otherwise the roads were passable on all but a few days. They also noted that the GOM had carried out an intensive campaign to introduce cotton spraying in the Balaka-Salima area in the early 1960's, and that the declining cotton production in the area (from 658 tons in 1967/68 to 544 tons in 1971/72) probably reflected the "dying out" of the effects of the earlier campaign as pests developed immunities, etc. They expected that production would increase as the Salima Project began more intensive operations in the area. However, it appears that it will be very difficult to achieve the incremental cotton output of 2,000-3,000 tons in 1975 projected in the SRC study and the CAP. It should be noted that the higher projection assumed an eventual average yield of 1,500 pounds per acre, whereas the highest recorded yield in the project area thus far is under 1,200 pounds. The present average yield (1971/72), with 80 percent of all cotton farmers now spraying, is 933 pounds.

Regarding increased incomes from fishing, it was not possible to collect any information which would shed light on the impact of the road on fish marketings or receipts. The Lake Malawi coast from Monkey Bay around the "southwest arm" to Salima (Senga Bay) is lined with small fishing villages, including the major fishing town of Malembo. Improved road access should enable fishermen to increase their incomes substantially even without increased tonnages, since better road access permits marketing a higher percentage of the catch as fresh fish and increases competition among buyers. According to data cited in a recent IBRD report, improved road access has resulted in increased earnings of 30 - 50 percent per pound for Malawi fishermen. 27/

It was also not possible to collect any information on possible increases in tourist receipts. However, a recent ODA-financed study recommended that the GOM concentrate on developing the Nankumba Peninsula (Monkey Bay) as the area of greatest potential on Lake Malawi. The GOM has accepted the recommendation and allocated \$2.5 million for necessary infrastructure development during the period 1975 - 1978. The Salima-Mua-Monkey Bay portion of the Lake Shore Road is very important for tourist development on the peninsula, since a large percentage of Malawi's tourists (about 25%) come from Zambia via Mabinji and Lilongwe. The Lake Shore Road provides quick, convenient dust free access (3 hours) to Monkey Bay from Lilongwe.

C. Incidence of Benefits

If the major benefits from road construction involve primarily road user savings and/or regional development, then questions involving incidence of benefits from road construction revolve around the analysis of the ultimate beneficiaries of the road user savings or regional development.

Road user savings are often passed on fairly rapidly to producers and consumers due to the highly competitive nature of the trucking industry in many developing countries. Since trucking offers negligible economies of scale, and since the cost of one truck is relatively low compared to many other types of investments, entry into the industry is easy. Consequently lower truck operating costs due to road improvements can be passed on rapidly as competition forces trucking rates down to levels consistent with lower costs. In the case of an agricultural area, this implies lower input costs and higher output prices, resulting often in a major improvement in incentives for cash crop production. As noted in a summary chapter of the Brookings volume on road development case studies, the "mechanism that served to stimulate additional output, cultivation of new lands, and more passenger travel was, in every case except that of EI Salvador, a rather sharp decrease in freight and passenger charges as well as improved services". 28/

Unfortunately, the operation of this mechanism is very circumscribed in the case of Malawi. The Agricultural Development and Marketing Corporation (ADMARC), which succeeded the Farmers Marketing Board in 1970, buys all major cash crops and provides production inputs at a fixed price throughout the country, regardless of transport costs. Thus transport cost savings are not passed on to farmers as lower input costs or higher product prices, although farmers should benefit from lower prices for consumer goods and higher prices for minor crops not sold through ADMARC. Thus the Lake Shore Road will not stimulate production through improved price incentives, nor will it result directly in higher incomes for small farmers through the passing on of road user savings. The major beneficiary of the lower transport costs initially will be ADMARC, which will be able to negotiate lower prices with contract truckers particularly when the bituminization of the road is completed. Farmers could benefit eventually, of course, as lower transport costs throughout Malawi enable ADMARC to fix input prices at lower levels and output prices at higher levels. Fishermen, on the other hand, may benefit fairly directly from lower transport costs and improved access, since lower road user costs and time savings will tend to be passed on in the form of higher purchase prices for fresh fish, as noted above.

To the extent that the road stimulates regional development, however, the incidence of benefits should be highly favorable, since the population of the area consists almost exclusively of small farmers. The one foreign-owned estate in the Balaka-Salima-Monkey Bay area closed several years ago, and there are presently no large commercial farms in the area nor are there any tractors. Most holdings are relatively small; of the 72 "progressive farmers" using farm plans under the Salima Project, only 11 had holdings of more than 20 acres. The largest holding is 52 acres (21 hectares). Since the progressive farmers also tend to be the farmers who have increased their holdings to the greatest extent, it is obvious that the average holding is quite small. About 90% of the land in the area is African Trust land, which can be allocated to farmers by local leaders on a traditional basis or lease-hold basis. There is no pressure on land at present.

Salima Project officials estimated that only about 25% of the arable land in the project area south of Salima is now under cultivation.

Malawi is also unusual in that there is apparently little or no overt unemployment, due to the fact that over 300,000 Malawians are working outside the country as migrant laborers. In the Salima Project area, the absentee rates for males between the ages of 20 and 25 ranges as high as 70% in some villages, with the highest absentee rates in the area south of Salima (Salima Project staff believe that this may be part of the reason for declining cotton output there). This could actually be a serious constraint to increased output, since the women who are left behind tend to be less able to be innovative than male heads of households, due to their heavy responsibilities. While the employment situation could change rapidly as a result of changes in Zambia, Rhodesia and South Africa, unemployment is not currently a major concern of the GOM. However, the successful extension of Salima Project operations to the area south of Salima (thanks to the cooperation of the bridge over the Linthippe River) could have a substantial positive employment impact in the area of influence of the Lake Shore Road.

With respect to benefit incidence at the "output" level, the Lake Shore Road provided direct employment to 1,450 Malawians at the peak and an average of about 750 over the 32-month construction period. Since the construction techniques were highly capital-intensive (in terms of use of equipment, materials and highly trained foreign manpower), the local wage bill only accounted for about 10% of total project costs. There was undoubtedly some useful training provided to Malawians, which should be reflected in higher lifetime earnings. These benefits are negligible in terms of projected overall project benefits, however.

D. Benefit - Cost Analysis

It must be pointed out at the outset that the development of an all-weather road along the narrow plain bordering Lake Malawi was desired by the GOM for reasons of national integration and in order to complete a basic truck road network as quickly as possible; i.e. the motivation for construction of the various road sections, including Balaka-Salima and Mua-Monkey Bay, was more political than economic. Also, the fact that President Banda approached the President of the U.S. personally for assistance in constructing the Lake Shore Road made the project very much a political project from the U.S. point of view. Consequently the role of the benefit-cost analysis was project "justification" more than project "appraisal" or apologetics rather than analysis. As the GOM pushed the design standards up in accordance with its own original conception of the project (which had not been fully supported by the SRC studies), there was little to do but find means of inflating the benefits accordingly. This is not necessarily entirely bad, since national integration does have an important value, albeit non-quantifiable, and since the probable misallocation of resources involved in building the road to excessive standards has relatively minor financial implications for the GOM. The role the benefit-cost analysis played

in this case should be kept in mind in reading what follows; those who did the benefit-cost analysis were undoubtedly aware that it was based on good politics but not on very good economics.

to question

As was suggested above, it is possible both the conceptual basis of the benefit-cost analysis in the CAPs as well as the estimates of various benefits. Here, however, we will concentrate on the latter. On the cost side, the final construction cost will be only about 10 percent higher than the estimate in the Phase II CAP (which must be regarded as an excellent performance). Maintenance cost will be higher by a greater amount. ²⁹ However, increases in both construction and maintenance costs over the Phase II CAP estimates are due primarily to inflation and would be offset by inflationary increases in benefit components (road user savings and output prices).

The "other development costs" projected in both the Phase I and Phase II CAPs, however, are obviously far too low and will probably account for the largest errors in the benefit and cost estimates. By 1985, for example, projected annual incremental income is nearly \$2 million, while the associated incremental costs (other than road maintenance) are only \$56,000 or about $2\frac{1}{2}$ percent of income. It is much more likely that the total incremental costs of generating the incremental income would be on the order of 50-75 percent of income, with a percentage at the lower end for fishing and a percentage at the upper end for agriculture and tourism.

On the benefit side, incremental net development benefits, using correct cost figures, might be only one-fourth to one-half of the projected benefits. Since these benefits account for about 80 percent of total project benefits, this would imply total benefits on the order of 40-60 percent of the projected benefits, even if the road user benefits were acceptable and materialized at the projected level. If road user benefits are only half of those projected (which seems likely based on the BAM traffic projections and actual traffic thus far), total benefits would be 30-50 percent of projected benefits. Any shortfalls in projected agricultural output (another likely possibility) would reduce actual total benefits correspondingly. Very tentatively, if we were to assign probabilities to the major variables based on the scanty evidence available, we would have an "expected value" for actual benefits of 25-40 percent of projected benefits.

It is also possible to ask how accurately the benefit-cost analysis reflects the actual relationship between the construction of the Lake Shore Road and economic development in its area of influence. It is not clear, for example, that physical access was a significant constraint to agricultural development in the area. Some all-weather physical access for most of the area was of course provided by the railway, and ADMARC was able to operate twelve input and produce marketing centers in the area with little difficulty. Also, the GOM had apparently found that physical access was good enough to permit the launching of an intensive cotton-production campaign south of Salima in the early 1960s. As noted in discussing the Salima Project, the one major

obstacle (in terms of access) to development south of Salima was the absence of a bridge over the Linthippe River. Other than that, Salima Project Staff felt that the old road paralleling the railway was adequate, although they noted the importance of developing a much more extensive network of feeder road in the area. Thus the physical access constraint to agricultural development probably could have been met by construction of several bridges and selective minor upgrading of the road. Anything beyond that may have no appreciable effect on agricultural output and incomes in the roads area of influence. This implies, of course, that it is incorrect to attribute a large percentage of the "regional development" benefits to the road, and to use those benefits to justify high design standards.

A high-standard gravelled or bitumenized road is relatively much more important, of course, for tourism development in the Monkey Bay area and for fisheries development, as was pointed out by SRC in their sector study. However, the benefits from increased tourism and fisheries earnings alone are obviously insufficient by themselves to support construction of the Lake Shore Road.

This suggests that actual benefits may be less than the 25-40 percent figure mentioned above. In any case, the 25-40 percent figure would imply that project benefits could only have provided an acceptable rate of return (12 percent or higher) to a road project costing roughly one-fourth to one-half of the estimated construction cost of \$9.3 million for the Balaka-Salima and Mua-Monkey Bay roads, i.e., a road project costing roughly \$2-4 million. If this is the case, the Lake Shore Road represents a major misallocation of resources for the GOM, amounting to \$5-7 million over the three-year period 1971-1973. This represents 3-5 percent of Malawi's development expenditures over the same period. The notion of resource misallocation assumes, of course, that the same funds would have been available from A.I.D. for other purposes and that there were other attractive investment opportunities to absorb the funds. This was probably not the case. From a strictly financial or budgetary point of view, moreover, the Lake Shore Road cost the GOM only \$1.3 million (\$9.3 million minus the \$8.0 million utilized from the A.I.D. loan), plus the discounted value of the loan repayments (present value of up to \$2.4 million, depending on the discount rate chosen). Given the GOM's relatively low contribution to the overall financing of the project (14 percent) and the concessional terms of the A.I.D. loan, there was little incentive for the GOM to do otherwise than press for a high-standard road with relatively low maintenance costs.

It would be possible at this point to prepare at least some of the elements of a full retrospective benefit-cost analysis. The construction costs are known, there are good current estimates of road maintenance costs and road user savings in Malawi, and traffic projections could be based on the January 1973 traffic counts. However, since the "regional development" benefits predominate in the original (Phase II CAP) analysis; since there is no basis at present for projecting the relevant incremental cost, output and income data; and since it is not clear how the construction of the Lake Shore Road

relates to development in the Balaka-Salima-Monkey Bay area, no attempt has been made to carry out new benefit-cost calculations.

Nevertheless, it may be useful to carry out a more comprehensive post-evaluation of the project at some later stage, perhaps in conjunction with a post-evaluation of the other two road projects being financed by A.I.D. in Malawi. A retrospective benefit-cost analysis could be undertaken, although it would have only limited usefulness. More useful subjects of inquiry might be the hypothesized relationship between various standards of road construction and various aspects of regional development, based on data collected by the Salima Project; the possible role of a high-standard road as an integrative force and a catalyst for types of development unforeseen in the studies; the optimum balance between high-standard and low-standard road construction within the context of regional development; and the role of infrastructure development in general in the modernization of an area such as the central lakeshore area.

Conclusions and Recommendations

A. Conclusions

1. Economic Rationale

Based on the data available thus far, it appears that construction and maintenance costs are generally consistent (in constant prices) with the original estimates, but that costs for non-road development were grossly understated in the benefit-cost analysis. (Phase II CAP) With respect to benefits, the original traffic projections are probably high by a factor of two or three. In particular, there is little likelihood that a significant number of trucks will use the road due to the rehabilitation of the parallel railway (ADMARC is generally required to ship agricultural inputs and output by rail to the greatest degree possible). The original projections of incremental agricultural output also appear to be very high. Also, the completion of the road to Class I bituminized standards (Class III bituminized in the case of the Mua-Monkey Bay road) has very little apparent relationship with increased agricultural output since road user savings are not passed on in the form of lower input prices or higher output prices, and physical access or high speed access were not major constraints to agricultural development in the area (i.e., there is no linkage between the output, purpose and goal levels). The latter are important for fishing and tourism, but they are of negligible importance.

There are three major reasons for the vast divergence between the original analysis and the emerging outcome. First, the benefit-cost analysis was used not as a tool for appraising the project and examining alternatives, but as a means of justifying a project constructed to design standards determined prior to the analysis on the basis of non-economic factors. As such, it was natural that costs were understated and benefits overstated. Second, the postulated relationship between road development and agricultural development, and the weight assigned to road development costs versus other

development costs, was erroneous. The analysis estimated that the incremental costs required to generate the incremental outputs could be assigned about 90 percent to road development expenditures and 10 percent to other expenditures. The reverse would probably be closer to correct } the incremental output in the area simply is not adequate to support both the direct investment costs and heavy infrastructure costs. Third, several assumptions failed to hold (see Annex C). With respect to assumptions affecting the relationship between the output level (road construction) and the purpose level (lower transport costs, better access), the major development was the GOM decision to rehabilitate the railway, diverting almost all potential heavy traffic to the railway. Even had the railway been abandoned, other traffic would have been substantially below projections, due partially to exaggerated projections and partially to other factors such as delays in completing the road sections and promoting development north of Salima. Regarding assumptions affecting the relationship of purpose to goals (increased output and incomes), the major problems are the absence of the usual price-cost mechanism in stimulating agricultural production, and the relative unimportance as a constraint of the type of physical access provided by the Lake Shore Road. (On the positive side, the GOM/FRG Salima Project goes well beyond the GOM agricultural development efforts assumed in the Phase II CAP; also, feeder road construction under the Salima Project exceeded the Phase II CAP requirements.)

To summarize, it is unlikely that a high-cost road can be economically viable if the road has a relatively small area of influence in a sparsely populated, medium-potential region, particularly if the road parallels a railway and does little to overcome production bottlenecks or stimulate output.

2. Equity Impact

Since benefit incidence (employment, income distribution, social equity, etc.) was not taken explicitly into account in the original analysis, there is no relevant baseline data and little basis for reaching and detailed conclusions concerning the project's equity impact. A few things can be said, however. At the output level (road construction), employment generation was not an important consideration for the GOM or A.I.D. The project employed about 1,500 people at the peak, but this is a small number considering the size of the investment. Based on comments by GOM and Salima Project staff, it might have been difficult to recruit substantially larger numbers of laborers given the GOM policy of encouraging labor migration to nearby countries and fixing wages at a low level. In the project area itself relatively little labor was available for the project, and some Salima Project staff attributed declining cotton output to employment on the road, among other factors.

At the purpose level (reduced transport costs, improved access), the equity impact of the road is limited by the ADMARC policy of selling inputs and buying cash crops at fixed prices, regardless of transport costs. Improved access will enable to Salima Project to expand its operations in

the area south of Salima, although this will have an adverse impact in a sense since the Project will work initially with the relatively larger, more progressive farmers. The expansion of Salima Project operations will of course have a favorable impact in the sense of helping to narrow rural-urban income differentials. (Improved physical access in itself will also be a boon to government officials or tourists travelling from Lilongwe to Monkey Bay, since the trip will be much shorter than via Mangochi and a great deal faster and more comfortable than previously.

At the goals level (increased agricultural output, fish production, tourism incomes), improved access and generally accelerated development should have a generally favorable impact on employment and income distribution. As noted above, agricultural development will probably favor larger farmers at first, and there is probably a danger that improved incentives combined with abundant land could lead to the emergencies of a self-perpetuating class of "Kulaks" who would dominate local institutions and perpetuate the cash crop and subsistence dualism, preventing the evolution of a more evenly-spread pattern of agricultural development. Whether this is a danger is difficult to assess. In any case, the abundance of land should forestall the creation of a class of landless laborers in the area. Increased fish production and higher incomes (due to the expanded market and greater competition among buyers made possible by all-asphalt roads to Lilongwe and Blantyre-Limbe-Zomba) should have a favorable equity impact, since the fishermen in the Mua-Monkey Bay road area are generally small operators. The greatest impact of the road possibly is on tourism development at Monkey Bay, which could generate substantial employment, both directly and indirectly.

3. Managed Force Account Construction

See Annex B, p. 1 and pp. 21-23.

B. Recommendations

1. Economic Analysis

Although the benefit-cost analysis may have been more "political" than "economic" in its motivation and mode of analysis, it illustrates several past shortcomings of benefit-cost analysis for road projects and leads to several recommendations.

First, the combined form of analysis used is conceptually suspect and should be avoided. Moreover, the "regional development" approach to benefit estimation is entirely too arbitrary if it involves benefit allocation to cost categories as in the case of the Phase II CAP analysis. There is no clear relationship between road standards and benefits, so any standard can be justified if the benefits can be escalated sufficiently to cover high construction costs. This can be avoided by using a cost-effectiveness approach, probably within the context of an overall benefit-

cost analysis for e.g. an integrated rural development program.

Recommendation 1: Road projects related to regional development or rural development programs should use a cost-effectiveness approach (generally within an overall benefit-cost framework) to assure appropriate design standards and prevent the development of excessively costly facilities.

Second, there is no way to assure that various calculations and assumptions (such as the assumption of railway abandonment) hold good for the life of the project, but possible changes can be taken into account by the use of sensitivity analysis and risk analysis (if available information supports assigning probabilities to various events). This should be a standard feature of all benefit-cost analysis; it would not necessarily apply to the analysis of road investments if a cost-effectiveness approach is used exclusively.

Recommendation 2: All benefit-cost analyses should routinely include a sensitivity analysis applied to the major variables.

Third, it is obviously difficult to assess a project's equity impact if the project was not analyzed originally in those terms. The Phase II CAP cannot be faulted for failing to consider employment and income distribution issues explicitly, since equity issues were not a major focus of A.I.D. policy at that time. However, more recent analyses have exhibited the same failings, partially because benefit-cost and cost-effectiveness analyses by their very nature relegate questions of benefit incidence to a secondary position, generally not closely integrated with the remainder of the analysis. If equity issues are to become a more central concern, A.I.D. will have to give greater attention to practical means of analyzing benefit incidence at the output, purpose and goal levels, and integrating these considerations more fully into standard approach to project analysis.

Recommendation 3: A.I.D. should intensify its efforts to develop practical guidance for project analysts concerning project benefit incidence.

2. Road Construction Methods and Standards

In the case of the Lake Shore Road, lower construction costs were more than offset in the view of the GOM by the very high management and administrative burden. Consequently the GOM will generally use contractors for construction of high-standard roads in the future. In some cases, of course, the host country executing agency could hire additional staff to handle the temporarily increased management burden by managed force account construction; this was apparently not possible for the GOM Ministry of Works and Supplies due to ceilings on the hiring of expatriates. Agencies could also reduce the management workload by contracting for major sub-components of the work, such as rock crushing or bridge construction. More simplified A.I.D. requirements and procedures for procurement and local cost reimburse-

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ment could also ease the management problems. Thus, there are a number of ways in which the construction savings/management-cost trade-off perceived by the GOM could be altered to make managed force account construction of high-standard roads a more attractive alternative. As standards are lowered, of course, various force account alternatives become relatively more attractive.

Recommendation 4: A.I.D. should continue its policy of encouraging contractor (U.S. or local) construction of high-standard roads, but should be prepared to consider managed force account on a case-by-case basis. In this connection, it may be useful to have a brief evaluation of managed force account road construction as currently practised in the U.S.

The traditional procedure in project design for roads amount to selecting a design standard and then finding adequate benefits to "justify" the road. When cost estimates increase, or bids come in over the estimates, as they generally do, the problem is one of finding additional benefits to maintain the "justification"; normally a revision to lower standards is not seriously considered. One way around this would be to maintain a series of design alternatives throughout the project preparation process, to permit selection of a lower-cost alternative if necessary. This could be extended through the bid process by a routine requirement for bid alternatives based on alternative design standards.

Recommendation 5: A.I.D. should consider requiring the inclusion of alternative design standards at every stage of the project preparation process through final bidding.

A.I.D. and other donors have been concerned in recent years with the possible extent of labor intensity in the construction and maintenance of roads, including high-standard roads. In general, the results of various studies thus far suggest that the scope for more labor-intensive techniques is quite limited for high-standard roads. ^{20/} (Opportunities for the substitution of labor for equipment increase as standards are lowered, however.) Even where there are possibilities for more labor-intensive construction, however, they may be precluded by donor concern with maintaining a high foreign exchange component in the project. In the case of the Lake Shore Road, for example, bridges could have been constructed using more local materials and generally more labor-intensive techniques, but the general pressure for a high level of offshore costs resulted in bridge construction using mainly imported materials. (See Annex B, p. 3).

Recommendation 6: A.I.D. should continue to seek out means of encouraging the use of local materials and labor-intensive techniques in road construction and should specifically instruct U.S. consultants design roads for the most economic use of materials and labor of the impact on overall project foreign exchange costs.

The current AID policy of sharply restricting assistance for the construction of high-standard roads, and the emphasis on agriculture

and rural development, including rural infrastructure, implies increased concern with construction of rural works on the basis of cost-effectiveness rather than benefit-cost criteria. This in turn requires that engineers and rural development practitioners be aware of an array of possible technical alternatives which may be optimal in terms of prevailing factor proportions. There is often knowledge of a limited number of technical options which have been tried in a particular country, but there is little information available on experience with technical alternatives for rural works construction over a large sample of countries. Such information would be extremely useful and would help to offset the normal engineering bias toward a single set of generally capital-intensive standards and construction methods.

Recommendation 7: A.I.D. should consider financing the preparation of a study resulting in a practical handbook of technical alternatives for rural road or other rural works construction in Africa.

3. Evaluation

Improved project design obviously requires better knowledge concerning the success or failure of past development activities. Evaluation can provide some of that knowledge. Capital project evaluation has several aspects, the most important of which are standard reporting and monitoring, annual project evaluations based on the Project Appraisal Report (PAR) used for non-capital projects, project completion reports, and special evaluations. Existing reporting and monitoring is probably adequate. The PAR is not generally used for capital projects as yet, but could be used with minimal modifications. The "project completion report" currently required for capital projects (M.O. 1264.1) is not particularly useful, but could be expanded to follow a format such as those of IBRD's "performance audits". The "logical framework" is a useful organizing device for special evaluations as well as monitoring, annual evaluation and project post-evaluation, and should become a standard feature of the capital project design and evaluation process. Within the outlines established by the logical framework and standard formats and procedures for monitoring, annual evaluation and final evaluation, there would be substantial variations in emphasis depending upon the nature of the project and the implications of possible evaluation findings for project re-design or design of other projects. Thus for the Lake Shore Road project, a PAR would probably have accomplished little in terms of reducing project costs in line with the changing project assumptions, but it would have provided a useful forum for thorough discussion of various implementation problems as well as a record for post-evaluation or special evaluation efforts. For non-construction projects, however, an annual PAR would probably receive greater emphasis, since there is greater scope for project re-design.

Recommendation 8: A.I.D. should establish a comprehensive and integrated monitoring, reporting and evaluation system for capital projects incorporating the logical framework, annual evaluation based on the PAR system, and final project evaluation, permitting substantial variation within the framework of a set of standard minimum requirements.

FOOTNOTES

1/ For a comprehensive discussion of Malawi's development policies and prospects, see IERD "Recent Economic Developments and Prospects of Malawi", Report No. 67a-MAI, March 30, 1973; an updated version should be available in mid-1974. Malawi's agricultural sector is surveyed and analyzed in IERD "Malawi - Agricultural Sector Review", Report No. 235a-MAT, December 28, 1973. Malawi's integrated rural development projects feature prominently in the IERD's African Rural Development Study (forthcoming).

2/ For SRC's recommendations for the 25-year program of construction or improvement of various road sections (including road class and type of surfacing) see SRC, National Transportation Plan for Nyasaland, June 1964, Tables IV-2 (first priority projects, 1964-1970), IV-3 (second priority, 1971-1977), IV-4 (third priority, 1978-1983), and IV-5 (fourth priority, 1984-1988).

3/ For a comparison of the SRC recommendations of 1964 with the present situation, see ANNEX D, "Trunk Road Development in Malawi".

4/ See Tables IV-2, IV-3, IV-4, IV-5, and IV-12, SRC, op.cit.

5/ ibid., p. III-12.

6/ ibid., p. IV.29.

7/ ibid., p. I-10.

8/ Balaka-Salima bitumenization only (two-lane); recommended for 1978-1983 period.

9/ Balaka-Salima one-lane bitumenization only; recommended for 1980.

10/ Cost estimate for construction by local contractor; no cost figure given for bitumenization.

11/ Assumes contractor construction, with application of seal coat by force account.

12/ Includes \$83,800 contingency costs.

13/ Assumes higher residual equipment value than Annex B; lower equipment value due to unexpected prolongation of equipment utilization into 1974 construction season for completion of Mua-Monkey Bay bitumenization, more than offset by procurement of additional spare parts for AID-financed equipment.

Footnotes (Continued)

14/ The total loan amount was \$8.2 million, but about \$200,000 will be deobligated in August or September.

15/ By comparison, the AID-financed construction of the Chikwawa-Bangula road, which is being built to somewhat higher standards than the Balaka-Salima road, will cost approximately \$240,000 per mile; most of the difference is due to higher oil costs and general inflation.

16/ AID, "Evaluation Handbook", Second Edition, February 1972, p. 14. See also "Project Evaluation Guidelines", Third Edition, May 1974; "A.I.D. Use of Development Indicators - A Progress Report", May 1973; and "The Logical Framework - Modifications Based on Experience", July 1973.

17/ For a very useful discussion of the case for capital project evaluation within AID, see AID, "Prospectus for Evaluation of Capital Projects", December 1972 (prepared by H. D. Turner, PPC/PME).

18/ For examples of possible modifications, see "The Logical Framework - Modifications Based on Experience", July 1973.

19/ For general discussions of the economics of road investment, see Gary Fromm (ed.), Transport Investment and Economic Development, Washington, DC: The Brookings Institution, 1965; Clell G. Harral, Preparation and Appraisal of Transport Projects, Washington, DC: U.S. Department of Transportation, 1968; and Hans A. Adler, Economic Appraisal of Transport Projects: A Manual With Case Studies, Bloomington: Indiana University Press, 1971. For some excellent case studies of the impact of road development on agriculture and the critical importance of non-road investments, see G. W. Wilson, E. R. Bergmann, L. V. Hirsch and U. S. Klein, The Impact of Highway Investment on Development, Washington, DC: The Brookings Institution, 1966.

20/ From UK Overseas Development Administration, "British Appraisal Mission to Malawi to Consider the Road and Rail Transport System between Lilongwe, Salima and Balaka", November 1971. The CAP I figures assume railway rehabilitation between Balaka and Salima; the PAM II figures assume abandonment.

21/ Based on figures provided by the GOM Ministry of Works and Supplies.

22/ In fact, the Phase I CAP noted (p. 5) that the GOM had "stated in writing to the consultants of the IFRD that it is the policy of the GOM to discontinue such rail service once the IFRD-financed road is available as an alternative means of handling the traffic. This should occur about 1970."

Footnotes (Continued)

23/ The analysis probably seriously understated the impact of the railway decision on the economics of the Balaka-Salima section, however.

24/ To prove that history can repeat itself, the GOM is now seriously pursuing the possibility of extending the railway from Lilongwe to Zambia to connect with the Zambian system. This would seriously affect the economics of the construction and asphaltting of Lilongwe-Mchinji (Zambia border) road, for which AID authorized a \$11.4 million loan in June 1974.

25/ No effort has been made to ascertain the present status of these efforts.

26/ GOM, "Central Region Lakeshore Development Project, Annual Report 1971" Salima, March 10, 1972, p. 3.

27/ IERD, "Appraisal of the Shire Valley Agricultural Development Project - Phase II, Malawi" (33a-MAI), February 15, 1973, Annex 4.

28/ Wilson et al, op. cit., p. 180.

29/ Compare the maintenance costs in the Phase II CAP with those in the recent CAP for the Lilongwe-Mchinji Road: "Malawi - Malawi Roads Phase II", Capital Assistance Paper AID-DIC/P-2044, Annex IX.

30/ See for example U.S. Department of Transportation, "Opportunities for Cost Reduction in the Design of Transport Facilities for Developing Countries", Washington, D.C., 1970; and IERD, "Study of the Substitution of Labor and Equipment in Civil Construction: Phase II Final Report", Staff Working Paper No. 172 (in three volumes), January 1974.

Annex B - See Separate Attachment

Evaluation of Force Account
Construction of Lake Shore Road

May, 1973

Gordon Manly, Consultant
John R. Westley, REDSO/EA

EVALUATION SUMMARY - CAPITAL PROJECTS

ORIGINAL PLAN		CURRENT STATUS		
Narrative Summary of Original Planned Objectives	2. Objectively Verifiable Indicators for Measuring: a. Progress toward Planned Targets; b. Benefit Incidence - Employment, Income Distribution, Social Equity, etc.	3. Planning Assumptions	4. Changes in Assumptions and Circumstances	5. Actual Progress in Terms of Objectively Verifiable Indicators: a. Progress toward Planned Targets; b. Benefit Incidence - Employment, Income Distribution, Social Equity, etc.
A. Sectoral or Program Goal	Measures of Goal Achievement a. Progress (Output or Income by 1985) 1) Agriculture - 24,000 tons (\$8,250 if no road) 2) Fish - 2,200 tons (\$1,800 if no road) 3) Tourism - \$511,000/year (\$255,000 if no road) b. Benefit Incidence Not discussed in CAP	Original Assumptions Affecting Linkage between Project Purpose and Sector-Program Goal 1. Agricultural Output a) GOM carries out necessary development programs (including feeder road construction) b) Better access results in increased production 2. Fish production a) Market responds to greater reliability of transport b) Catch increases in response to greater demand 3. Tourism a) Facilities developed b) Monkey Bay attractive for tourists	Changes Affecting the Linkage between Project Purpose and Sector-Program Goal 1. Agricultural Output a) Salima Project b) Better access weakly related to increased output 2. Fish Production No information available 3. Tourism As planned	Contribution of Project to Sector-Program Goal: a. Progress (Output or Income by 1985) 1) Agriculture - no data (probably below target) 2) Fish production - no data 3) Tourism - no data b. Benefit Incidence 1) Agriculture - small farmers benefit; precise data not available 2) Fish production - no data 3) Tourism - no data on employment
B. Project Purpose	Conditions Expected at End of Project a. Progress 1) All-season access 2) Road user savings \$529,000/year by 1985 b. Benefit Incidence Not discussed in CAP	Original Assumptions Affecting Linkage between Project Outputs and Project Purpose 1. Balaka-Salima rail line abandoned by 1975 2. Transport cost savings generated per estimates 3. Roads adequately maintained 4. Salima-Nkhata Bay road completed early 1970's	Changes Affecting the Linkage between Project Outputs and Project Purpose 1. Balaka-Salima rail line rehabilitated 2. Transport cost savings below projections 3. No data 4. Salima-Nkhata Bay road not completed on schedule	Progress toward Project Purpose a. Progress 1) Road provides all-season access 2) Road user savings probably below target (constant prices) b. Benefit Incidence 1) Improved access benefits vehicle users and tourists; also farmers and fishermen 2) Road user savings benefit transport operators
C. Project Outputs	Magnitudes of Outputs a. Progress Construction completed early 1971 b. Benefit Incidence Training provided if force account used			Progress Toward Output Targets a. Progress Construction completed Nov. 1972; bitumenization August 1974 b. Benefit Incidence 1456 Malawians employed at peak; 91 operators trained; and over 25 GOM supervisors trained.

ANNEX DTRUNK ROAD DEVELOPMENT IN MALAWI

<u>Road Section (Mileage)</u>	<u>SRC Recommendations - 1964</u>		<u>Actual or Planned - 1974</u>		<u>Financing</u>
	<u>Type of Improvement</u>	<u>Timing</u>	<u>Type of Improvement</u>	<u>Timing (Completion)</u>	
Liwonde-Mangochi (46)	Class I Asphalt	1964-1970	Class I Asphalt	1968	GOM
Mangochi-Monkey Bay(42)	Class I Asphalt	1971-1977	Class I Asphalt	1974	GOM/UK
Zomba-Liwonde- Lilongwe (177)	Class I Asphalt	1964-1970	Class I Asphalt	1971	IFRD
Lilongwe-Mchinji (78)	Class I Asphalt	1964-1970	Class I Asphalt	1976	AID
Lilongwe-Kasungu (86)	Class I Asphalt	1971-1977	Class I Asphalt	1976	IFRD
Blantyre-Chikwawa (20)	Class I Asphalt	1964-1977	Class III Asphalt	(not improve	
Chikwawa-Bangula (62)	Class II Asphalt	1971-1977	Class I Asphalt	1976	AID
Chilumba-Karonga (55)	Class II Gravel	1971-1977	Class I Asphalt	1972	FRG
Balaka-Salima (89)	Class II Gravel	1964-1970	Class I Asphalt	1974	AID
Balaka-Salima (89)	Class II Asphalt	1978-1983	-		
Mua-Monkey Bay (36)	Class III Gravel	1984-1988	Class III Asphalt	1974	AID
Salima-Nkotakota (76)	Class III Asphalt	1964-1970	Class II Gravel	1968	GOM/UK
Nkotakota-Nkhata Bay (112)	Class III Gravel	1978-1983	Class II Asphalt	1976	GOM/UK

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Manly, Gordon; and John Westley

The Malawi Lake Shore Road Project Evaluation Report (AID Use
Only
June 1974

35 pages

5 annexes

AID Contract Number:

AID Project Number: 612-22-311-153

Source: ARC MI 625.7 M279

This evaluation report was undertaken (1) to assess the advantages, disadvantages, and possible replicability of the "modified" force account approach used in this project and (2) to consider how AID's evaluation procedures for non-capital projects should be applied to capital projects. The evaluation procedure led the evaluators to make 8 recommendations including: (1) road projects related to regional development or rural development programs should use a cost-effectiveness approach to assure appropriate design standards and prevent the development of excessively costly facilities; (2) all benefit-cost analyses should routinely include a sensitivity analysis applied to the major variables; (3) AID should continue its policy of encouraging contractor construction of high-standard roads, but should be prepared to consider managed force account on a case-by-case basis; (4) AID should continue to seek out means of encouraging the use of local materials and labor-intensive techniques; and (5) AID should establish a comprehensive and integrated monitoring, reporting and evaluation system for capital projects incorporating the logical framework, annual evaluation based on the PAR (Project Appraisal Report) system, and final project evaluation, permitting substantial variation within the framework of a set of standard minimum requirements.

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Annex A

L O A N A G R E E M E N T dated the 17th day of July , 1969
between the GOVERNMENT OF MALAWI ("Borrower") and the UNITED STATES OF
AMERICA, acting through the AGENCY FOR INTERNATIONAL DEVELOPMENT
("A.I.D.").

ARTICLE I

The Project

SECTION 1.01. The Loan. A.I.D. agrees to lend to the
Borrower pursuant to the Foreign Assistance Act of 1961, as amended,
an amount not to exceed Seven Million United States Dollars
(\$7,000,000) ("Loan") to assist the Borrower in carrying out the
Project referred to in Section 1.02 ("Project"). The Loan shall be
used exclusively to finance United States dollar costs of goods and
services required for the Project ("Dollar Costs") and local currency
costs of goods and services required for the Project ("Local Currency
Costs"). Except as A.I.D. may otherwise agree in writing, the amount
of the Loan used to finance the Local Currency Costs shall not exceed
the equivalent of Five Hundred Thousand United States Dollars
(\$500,000). The aggregate amount of disbursements under the Loan is
hereinafter referred to as "Principal."

SECTION 1.02. The Project. The Project shall consist of
the construction of a road connecting Balaka with Salima and a road
from Mua to the vicinity of Monkey Bay. The Project is more fully
described in Annex A hereto, the specific details of which may be
modified by written agreement of Borrower and A.I.D.

SECTION 1.03. Borrower's Financing. In addition to, but not in limitation of, Borrower's obligation to provide any other resources or funds, in addition to the Loan, required to complete the Project, Borrower agrees to finance not less than the dollar equivalent (as at the date of this Agreement) of six hundred thousand Malawi pounds (£600,000) of local costs and non-United States foreign exchange costs of goods and services required for the Project.

SECTION 1.04. Use of Funds Generated by Other United States Assistance. The Borrower shall use for the Project, in lieu of any United States dollars that would otherwise be disbursed under the Loan to finance the Local Currency Costs of the Project, any currencies other than United States dollars that may become available to the Borrower after the date of this Agreement in connection with assistance (other than the Loan) provided by the United States of America to the Borrower to the extent and for the purposes that A.I.D. and the Borrower may agree in writing. Any such funds used for the Project shall reduce the amount of the Loan (to the extent that it shall not then have been disbursed) by an equivalent amount of United States dollars computed, as of the date of the agreement between A.I.D. and the Borrower as to the use of such funds, at the rate of exchange defined in the Special Letter of Credit Implementation Memorandum referred to in Section 7.02 as in effect on such date.

ARTICLE II

Loan Terms

SECTION 2.01. Interest. The Borrower shall pay to A.I.D. interest which shall accrue at the rate of two percent (2%) per annum for ten years following the date of the first disbursement hereunder and at the rate of two and one-half percent (2½%) per annum thereafter on the outstanding balance of Principal and on any due and unpaid interest. Interest on the outstanding balance shall accrue from the date of each respective disbursement (as such date is defined in Section 7.04), and shall be computed on the basis of a 365-day year. Interest shall be payable semiannually. The first payment of interest shall be due and payable no later than six (6) months after the first disbursement hereunder, on a date to be specified by A.I.D.

SECTION 2.02. Repayment. The Borrower shall repay to A.I.D. the Principal within forty (40) years from the date of the first disbursement hereunder in sixty-one (61) approximately equal semiannual installments of Principal and interest. The first installment of Principal shall be payable nine and one-half (9½) years after the date on which the first interest payment is due in accordance with Section 2.01. A.I.D. shall provide the Borrower with an amortization schedule in accordance with this Section after the final disbursement under the Loan.

SECTION 2.03. Application, Currency, and Place of Payment

All payments of interest and Principal hereunder shall be made in United States dollars and shall be applied first to the payment of interest due and then to the repayment of Principal. Except as A.I.D. may otherwise specify in writing, all such payments shall be made to the Controller, Agency for International Development, Washington, D. C., U.S.A., and shall be deemed made when received by the Office of the Controller.

SECTION 2.04. Prepayment. Upon payment of all interest and refunds then due, the Borrower may prepay, without penalty, all or any part of the Principal. Any such prepayment shall be applied to the installments of Principal in the inverse order of their maturity.

SECTION 2.05. Renegotiation of the Terms of the Loan.

The Borrower agrees to negotiate with A.I.D., at such time or times as A.I.D. may request, an acceleration of the repayment of the Loan in the event that there is any significant improvement in the internal and external economic and financial position and prospects of Malawi.

ARTICLE III

Conditions Precedent to Disbursement

SECTION 3.01. Conditions Precedent to Initial Disbursement.

Prior to the first disbursement or to the issuance of the first Letter of Commitment under the Loan, the Borrower shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(a) An opinion of the Attorney General of Borrower or of other counsel acceptable to A.I.D. that this Agreement has been duly authorized and/or ratified by, and executed on behalf of, the Borrower, and that it constitutes a valid and legally binding obligation of the Borrower in accordance with all of its terms;

(b) A statement of the names of the persons holding or acting in the office of the Borrower specified in Section 9.02, and a specimen signature of each person specified in such statement;

(c) (i) An executed contract for supervisory engineering services for the Project with a firm acceptable to A.I.D., or (ii) another arrangement for such services for the Project which is acceptable to A.I.D.; and

(d) If subsection (c) (i) of this Section shall not be satisfied, an executed contract for construction management services for the Project acceptable to A.I.D. with a firm acceptable to A.I.D.

SECTION 3.02. Conditions Precedent to Additional Disbursement

Prior to any disbursement or to the issuance of any Letter of Commitment under the Loan for any purpose other than to finance the services referred to in Section 3.01, the Borrower shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(a) Plans and specifications, cost estimates and time schedules for carrying out the Project;

(b) A description of construction equipment and materials needed for the Project to be procured under the Loan and a statement of the arrangement for their procurement;

(c) A budget and statement of the arrangements whereby Borrower shall provide its financial contribution to the project pursuant to Section 1.03;

(d) Evidence that Borrower has taken all steps necessary to acquire all rights of way or easements necessary to carry out the Project;

(e) An executed contract for construction management services for the Project acceptable to A.I.D. with a firm acceptable to A.I.D., unless such contract has earlier been provided to A.I.D. under Section 3.01 (d) of this Agreement;

(f) Evidence that Borrower has made adequate arrangements for maintenance of the Project which shall include (i) evidence that an adequate highway maintenance organization has been or will be promptly established and (ii) a detailed estimate of the cost of adequate maintenance operations for the Project including assurance that sufficient funds will be provided for this purpose; and

(g) Such other documents as A.I.D. may reasonably request.

SECTION 3.03. Terminal Dates for Meeting Conditions

Precedent to Disbursement. Except as A.I.D. may otherwise agree in writing, if the conditions specified in Section 3.01 shall not have been met within two (2) months from the date of this Agreement, or the conditions specified in Section 3.02 shall not have been met within five (5) months from the date of this Agreement, A.I.D., at its option, may terminate this Agreement by giving written notice to the Borrower. Upon such notice, Borrower shall repay any unrepaid Principal and any accrued interest whereupon all other obligations of the parties under this Agreement shall terminate.

SECTION 3.04. Notification of Meeting of Conditions

Precedent to Disbursement. A.I.D. shall notify the Borrower upon determination by A.I.D. that the conditions precedent to disbursement specified in Sections 3.01 and 3.02 have been met.

ARTICLE IV

General Covenants and Warranties

SECTION 4.01. Execution of the Project.

(a) The Borrower shall carry out the Project with due diligence and efficiency, and in conformity with sound engineering, construction, financial, administrative and highway management and maintenance practices. In this connection, the Borrower shall at all times employ suitably qualified and experienced engineers to be professionally responsible for the execution of the Project and suitably qualified and competent construction experts to assist in carrying out the Project. The Borrower shall further provide from its own forces a sufficient number of suitably qualified and experienced personnel to carry out the Project on a timely basis.

(b) The Borrower shall cause the Project to be carried out in conformity with all of the plans, specifications, contracts, schedules, and other arrangements, and with all modifications therein, approved by A.I.D. pursuant to this Agreement.

SECTION 4.02. Funds and Other Resources to be Provided by Borrower. The Borrower shall provide promptly as needed all funds, in addition to the Loan, and all other resources required for the punctual and effective carrying out of the construction maintenance and repair of the Project.

SECTION 4.03. Continuing Consultation. The Borrower and A.I.D. shall cooperate fully to assure that the purpose of the Loan will be accomplished. To this end, the Borrower and A.I.D. shall from time to time, at the request of either party, exchange views through their representatives with regard to the progress of the Project, the performance by the Borrower of its obligations under this Agreement, the performance of the consultants, contractors, and suppliers engaged on the Project, and other matters relating to the Project.

SECTION 4.04. Operation and Maintenance. The Borrower shall operate, maintain, and repair the Project in conformity with sound engineering, financial and administrative practices and in such manner as to insure the continuing and successful achievement of the purposes of the Project.

SECTION 4.05. Taxation. This Agreement, the Loan and any evidences of indebtedness issued in connection herewith shall be free from, and the Principal and interest shall be paid without deduction for and free from, any taxation or fees imposed under the laws in effect within the country of the Borrower. To the extent that (a) any contractor, including any consulting or engineering firm, any personnel of such contractor financed hereunder, and any property or transactions relating to such contracts and (b) any commodity procurement transaction financed hereunder, are not

exempt from identifiable taxes, tariffs, duties, and other levies imposed under laws in effect in the country of the Borrower, the Borrower shall, as and to the extent prescribed in and pursuant to Implementation Letters, pay or reimburse the same under Section 4.02 of this Agreement with funds other than those provided under the Loan.

SECTION 4.06. Utilization of Goods and Services.

(a) Goods and services financed under the Loan shall be used exclusively for the Project, except as A.I.D. may otherwise agree in writing. Upon completion of the Project, or at such other time as goods financed under the Loan can no longer usefully be employed for the Project, the Borrower may use or dispose of such goods in such manner as A.I.D. may agree to in writing prior to such use or disposition.

(b) Except as A.I.D. may otherwise agree in writing, no goods or services financed under the Loan shall be used to promote or assist any foreign aid project or activity associated with or financed by any country not included in Code 935 of the A.I.D. Geographic Code Book as in effect at the time of such use.

SECTION 4.07. Disclosure of Material Facts and Circumstances. The Borrower represents and warrants that all facts and circumstances that it has disclosed or caused to be disclosed to A.I.D. in the course of obtaining the Loan are accurate and complete, and that it has disclosed to A.I.D., accurately and

completely, all facts and circumstances that might materially affect the Project and the discharge of its obligations under this Agreement. The Borrower shall promptly inform A.I.D. of any facts and circumstances that may hereafter arise that might materially affect, or that it is reasonable to believe might materially affect, the Project or the discharge of the Borrower's obligations under this Agreement.

SECTION 4.08. Commissions, Fees, and Other Payments.

(a) Borrower warrants and covenants that in connection with obtaining the Loan, or taking any action under or with respect to this Agreement, it has not paid, and will not pay or agree to pay, nor to the best of its knowledge has there been paid nor will there be paid or agreed to be paid by any other person or entity, commissions, fees, or other payments of any kind, except as regular compensation to the Borrower's full-time officers and employees or as compensation for bona fide professional, technical, or comparable services. The Borrower shall promptly report to A.I.D. any payment or agreement to pay for such bona fide professional, technical, or comparable services to which it is a party or of which it has knowledge (indicating whether such payment has been made or is to be made on a contingent basis), and if the amount of any such payment is deemed unreasonable by A.I.D., the same will be adjusted in a manner satisfactory to A.I.D.

(b) The Borrower warrants and covenants that no payments have been or will be received by the Borrower, or any official of the Borrower, in connection with the procurement of goods and services financed hereunder, except fees, taxes, or similar payments legally established in the country of the Borrower.

SECTION 4.09. Maintenance and Audit of Records. The Borrower shall maintain, or cause to be maintained, in accordance with sound accounting principles and practices consistently applied, books and records relating both to the Project and to this Agreement. Such books and records shall, without limitation, be adequate to show:

- (a) the receipt and use made of goods and services acquired with funds disbursed pursuant to this Agreement;
- (b) the nature and extent of solicitations of prospective suppliers of goods and services acquired;
- (c) the basis of the award of contracts and orders to successful bidders; and
- (d) the progress of the Project.

Such books and records shall be regularly audited, in accordance with sound auditing standards, for such period and at such intervals as A.I.D. may require, and shall be maintained for five years after the date of the last disbursement by A.I.D. or until all sums due A.I.D. under this Agreement have been paid, whichever date shall first occur.

SECTION 4.10. Reports. The Borrower shall furnish to A.I.D. such information and reports relating to the Loan and to the Project as A.I.D. may request.

SECTION 4.11. Inspection. The authorized representatives of A.I.D. shall have the right at all reasonable times to inspect the Project, the utilization of all goods and services financed under the Loan, and the Borrower's books, records, and other documents relating to the Project and the Loan. The Borrower shall cooperate with A.I.D. to facilitate such inspections and shall permit representatives of A.I.D. to visit any part of the country of the Borrower for any purpose relating to the Loan.

SECTION 4.12. Investment Guaranty Project Approval by Borrower. The Borrower agrees that the construction work to be financed under this Agreement is a project approved by the Borrower pursuant to the Agreement between the Government of Malawi and the United States of America on the subject of investment guaranties, and no further approval by the Government of Malawi shall be required to permit A.I.D. under that agreement to issue investment guaranties covering a contractor's investment in that project.

ARTICLE V

Special Covenants and Warranties

SECTION 5.01. Feeder Roads. The Borrower agrees to furnish to A.I.D., within eighteen (18) months from the date of this Agreement, in form and substance satisfactory to A.I.D., plans and specifications of, and proposed financing and construction arrangements for an adequate system of feeder roads appurtenant to the Project. Borrower further agrees to cause construction of said system of feeder roads to be completed not more than eighteen (18) months after completion of the Project. These obligations of Borrower are in addition to Borrower's obligations under Section 4.02 of this Agreement.

ARTICLE VI

Procurement

SECTION 6.01. Procurement from the United States. Except as A.I.D. may otherwise agree in writing, disbursements made pursuant to Section 7.01 shall be used exclusively to finance the procurement for the Project of goods and services having both their source and origin in the United States of America. All ocean shipping and marine insurance financed under the Loan shall have both their source and origin in the United States of America.

SECTION 6.02. Procurement from Malawi. Disbursements made pursuant to Section 7.02 shall be used exclusively to finance the procurement for the Project of goods and services having both their source and origin in Malawi.

SECTION 6.03. Eligibility Date. Except as A.I.D. may otherwise agree in writing, no goods or services may be financed under the Loan which are procured pursuant to orders or contracts firmly placed or entered into prior to June 1, 1968 except for financing of services under Borrower's contract dated May 29, 1967 with Tippetts-Abbett-McCarthy-Stratton.

SECTION 6.04. Goods and Services Not Financed Under Loan. Goods and services procured for the Project, but not financed under the Loan, shall have their source and origin in countries included in Code 935 of the A.I.D. Geographic Code Book as in effect at the time orders are placed for such goods and services.

SECTION 6.05. Implementation of Procurement Requirements. The definition applicable to the eligibility requirements of Sections 6.01, 6.02, and 6.04 will be set forth in detail in Implementation Letters.

SECTION 6.06. Plans, Specifications, and Contracts.

(a) Except as A.I.D. may otherwise agree in writing, the Borrower shall furnish to A.I.D. promptly upon preparation, all

plans, specifications, construction schedules, bid documents, and contracts relating to the Project, and any modifications therein, whether or not the goods and services to which they relate are financed under the Loan.

(b) Except as A.I.D. may otherwise agree in writing, all of the plans, specifications, and construction schedules furnished pursuant to subsection (a) above shall be or have been approved by A.I.D. in writing.

(c) All bid documents and documents related to the solicitation of proposals relating to goods and services financed under the Loan shall be or have been approved by A.I.D. in writing.

(d) The following contracts financed under the Loan shall be or have been approved by A.I.D. in writing prior to their execution:

- (i) contracts for engineering and other professional services;
- (ii) contracts for construction management services;
- (iii) contracts for such other services as A.I.D. may specify; and
- (iv) contracts for such equipment and materials as A.I.D. may specify.

In the case of any of the above contracts for services, A.I.D. shall also approve in writing the contractor and such contractor personnel as A.I.D. may specify. Material modifications in any of such contracts and changes in any of such personnel shall also be approved by A.I.D. in writing prior to their becoming effective.

SECTION 6.07. Reasonable Price. No more than reasonable prices shall be paid for any goods or services financed, in whole or in part, under the Loan, as more fully described in Implementation Letters. Such items shall be procured on a fair and, except for professional services, on a competitive basis in accordance with procedures therefor prescribed in Implementation Letters.

SECTION 6.08. Employment of Third-Country Nationals Under Construction Contracts. The employment of personnel to perform services under construction contracts financed under the Loan shall be subject to requirements with respect to third-country nationals prescribed in Implementation Letters.

SECTION 6.09. Shipping and Insurance.

(a) Goods procured from the United States and financed under the Loan shall be transported to the country of the Borrower on flag carriers of any country included in Code 935 of the A.I.D. Geographic Code Book as in effect at the time of the shipment.

(b) At least fifty percent (50%) of the gross tonnage of all goods procured from the United States and financed under the Loan (computed separately for dry bulk carriers, dry cargo liners, and tankers) which shall be transported on ocean vessels shall be transported on privately owned United States flag commercial vessels unless A.I.D. shall determine that such vessels are not available at fair and reasonable rates for United States flag commercial vessels. No such goods may be transported on any ocean vessel (or aircraft) (i) which A.I.D., in a notice to the Borrower, has designated as ineligible to carry A.I.D.-financed goods or (ii) which has been chartered for the carriage of A.I.D.-financed goods unless such charter has been approved by A.I.D.

(c) If in connection with the placement of marine insurance on shipments financed under United States legislation authorizing assistance to other nations, the country of the Borrower, by statute, decree, rule, or regulation, favors any marine insurance company of any country over any marine insurance company authorized to do business in any state of the United States of America, goods procured from the United States and financed under the Loan shall during the continuance of such discrimination be insured against marine risk in the United States of America with a company or companies authorized to do a marine insurance business in any state of the United States of America.

(d) The Borrower shall insure, or cause to be insured, all goods procured in the United States and financed under the Loan against risks incident to their transit to the point of their use in the Project. Such insurance shall be issued upon terms and conditions consistent with sound commercial practice, shall insure the full value of the goods, and shall be payable in the currency in which such goods were financed. Any indemnification received by the Borrower under such insurance shall be used to replace or repair any material damage or any loss of the goods insured or shall be used to reimburse the Borrower for the replacement or repair of such goods. Any such replacement shall be of United States source and origin and otherwise subject to the provisions of this Agreement.

SECTION 6.10. Information and Marking. Borrower shall give publicity to the Loan and the Project as a program of United States aid, identify the Project site, and mark goods financed under the Loan, as prescribed in Implementation Letters.

SECTION 6.11. Notification to Potential Suppliers. In order that all United States firms shall have the opportunity to participate in furnishing goods and services to be financed under the Loan, the Borrower shall furnish to A.I.D. such information with regard thereto, and at such time, as A.I.D. may request in Implementation Letters.

ARTICLE VII

Disbursements

SECTION 7.01. Disbursement for United States Dollar Costs -

Letters of Commitment to United States Banks. Upon satisfaction of conditions precedent, the Borrower may, from time to time, request A.I.D. to issue Letters of Commitment for specified amounts to one or more United States banks, satisfactory to A.I.D., committing A.I.D. to reimburse such bank or banks for payments made by them to contractors or suppliers, through the use of Letters of Credit or otherwise, for dollar costs of goods and services procured for the Project in accordance with the terms and conditions of this Agreement. Payment by a bank to a contractor or supplier will be made by the bank upon presentation of such supporting documentation as A.I.D. may prescribe in Letters of Commitment and Implementation Letters. Banking charges incurred in connection with Letters of Commitment and Letters of Credit shall be for the account of the Borrower and may be financed under the Loan.

SECTION 7.02. Disbursement for Local Currency Costs.

Upon satisfaction of conditions precedent, the Borrower may, from time to time, request A.I.D. to finance Local Currency Costs of goods and services procured for the Project in accordance with the terms and conditions of this Agreement by submitting to A.I.D. such supporting documentation as A.I.D. may prescribe in Implementation

Letters. A.I.D., at its option, may finance such Local Currency Costs either by:

(a) making such local currency available from currency of the country of the Borrower owned by the U.S. Government and obtained by A.I.D. with United States dollars; or

(b) (i) requiring the Borrower to make available local currency in a manner satisfactory to A.I.D. for the payment of such Local Currency Costs and

(ii) thereafter making available to Borrower, through the opening or amendment of Special Letters of Credit by A.I.D. in favor of Borrower or its designee, an amount of United States dollars equivalent to the amount of local currency made available hereunder, which dollars shall be utilized for procurement from the United States in accordance with requirements prescribed by A.I.D.

The United States dollar equivalent of the local currency made available hereunder will be, in the case of local currency made available as described in paragraph (a) above, the amount of United States dollars required by A.I.D. to obtain the currency of the country of the Borrower and, in the case of local currency made available as described in paragraph (b) above, an amount calculated at the rate of exchange specified in the Special Letter of Credit Implementation Memorandum to be entered into

between Borrower and the United States of America as of the date of opening or amendment of the applicable Special Letter of Credit.

SECTION 7.03. Other Forms of Disbursement. Disbursements of the Loan may also be made through such other means as the Borrower and A.I.D. may agree to in writing.

SECTION 7.04. Date of Disbursement. Disbursements by A.I.D. shall be deemed to occur, (a) in the case of disbursements pursuant to Section 7.01, on the date on which A.I.D. makes a disbursement to a banking institution pursuant to a Letter of Commitment, and (b) in the case of disbursements pursuant to Section 7.02, on the date on which A.I.D. disburses the local currency to the Borrower or its designee or on the date on which A.I.D. opens or amends the Special Letter of Credit referred to in Section 7.02, as the case may be.

SECTION 7.05. Terminal Date for Disbursement. Except as A.I.D. may otherwise agree in writing, no Letter of Commitment, or other commitment documents which may be called for by another form of disbursement under Section 7.03, or amendment thereto shall be issued in response to requests received by A.I.D. after December 1, 1971, and no disbursement shall be made against documentation received by A.I.D., or any bank described in Section 7.01 after June 1, 1972. A.I.D., at its option, may at any time or times after June 1, 1972, reduce the Loan by all or any part thereof for which documentation was not received by such date.

ARTICLE VIII

Cancellation and Suspension

SECTION 8.01. Cancellation by the Borrower. The Borrower may, with the prior written consent of A.I.D., by written notice to A.I.D., cancel any part of the Loan (i) which, prior to the giving of such notice, A.I.D. has not disbursed or committed itself to disburse, or (ii) which has not then been utilized through the issuance of irrevocable Letters of Credit or through bank payments made other than under irrevocable Letters of Credit.

SECTION 8.02. Events of Default: Acceleration. If any one or more of the following events ("Events of Default") shall occur:

- (a) The Borrower shall have failed to pay when due any interest or installment of Principal required under this Agreement;
- (b) The Borrower shall have failed to comply with any other provision of this Agreement, including, but without limitation, the obligation to carry out the project with due diligence and efficiency;
- (c) The Borrower shall have failed to pay when due any interest or any installment of Principal or any other payment required under any other loan agreement, any guaranty agreement, or any other agreement between the Borrower or any of its agencies and A.I.D., or any of its predecessor agencies,

then A.I.D. may, at its option, give to the Borrower notice that all

or any part of the unrepaid Principal shall be due and payable sixty (60) days thereafter, and, unless the Event of Default is cured within such sixty (60) days:

- (i) such unrepaid Principal and any accrued interest hereunder shall be due and payable immediately; and
- (ii) the amount of any further disbursements made under then outstanding irrevocable Letters of Credit or otherwise shall become due and payable as soon as made.

SECTION 8.03. Suspension of Disbursement. In the event that at any time:

- (a) An Event of Default has occurred;
- (b) An event occurs that A.I.D. determines to be an extraordinary situation that makes it improbable either that the purpose of the Loan will be attained or that the Borrower will be able to perform its obligations under this Agreement;
- (c) Any disbursement by A.I.D. would be in violation of the legislation governing A.I.D., or
- (d) The Borrower shall have failed to pay when due any interest or any installment of Principal or any other payment required under any other loan agreement, any guaranty agreement, or any other agreement between the Borrower or any of its agencies and the Government of the United States or any of its agencies;

Then A.I.D. may, at its option:

- (i) suspend or cancel outstanding commitment documents to the extent that they have not been utilized through the issuance of irrevocable Letters of Credit or through bank payments made other than under irrevocable Letters of Credit, in which event A.I.D. shall give notice to the Borrower promptly thereafter;
- (ii) decline to make disbursements other than under outstanding commitment documents;
- (iii) decline to issue additional commitment documents;
- (iv) at A.I.D.'s expense, direct that title to goods financed under the Loan shall be transferred to A.I.D. if the goods are from a source outside the country of the Borrower, are in a deliverable state and have not been offloaded in ports of entry of the country of the Borrower. Any disbursement made or to be made under the Loan with respect to such transferred goods shall be deducted from Principal.

SECTION 8.04. Cancellation by A.I.D. Following any suspension of disbursements pursuant to Section 8.03, if the cause or causes for such suspension of disbursements shall not have been eliminated or corrected within sixty (60) days from the date of such suspension, A.I.D. may, at its option, at any time or times thereafter, cancel all or any part of the Loan that is not then either disbursed or subject to irrevocable Letters of Credit.

SECTION 8.05. Continued Effectiveness of Agreement. Notwithstanding any cancellation, suspension of disbursement, or acceleration of repayment, the provisions of this Agreement shall

continue in full force and effect until the payment in full of all Principal and any accrued interest hereunder.

SECTION 8.06 Refunds.

(a) In the case of any disbursement not supported by valid documentation in accordance with the terms of this Agreement, or of any disbursement not made or used in accordance with the terms of this Agreement, A.I.D., notwithstanding the availability or exercise of any of the other remedies provided for under this Agreement, may require the Borrower to refund such amount in United States dollars to A.I.D. within thirty days after receipt of a request therefor. Such amount shall be made available first for the cost of goods and services procured for the Project hereunder, to the extent justified; the remainder, if any, shall be applied to the installments of Principal in the inverse order of their maturity and the amount of the Loan shall be reduced by the amount of such remainder. Notwithstanding any other provision in this Agreement, A.I.D.'s right to require a refund with respect to any disbursement under the Loan shall continue for five years following the date of such disbursement.

(b) In the event that A.I.D. receives a refund from any contractor, supplier, or banking institution, or from any other third party connected with the Loan, with respect to goods or services financed under the Loan, and such refund relates to an

unreasonable price for goods or services, or to goods that did not conform to specifications, or to services that were inadequate, A.I.D. shall first make such refund available for the cost of goods and services procured for the Project hereunder, to the extent justified, the remainder to be applied to the installments of Principal in the inverse order of their maturity and the amount of the Loan shall be reduced by the amount of such remainder.

SECTION 8.07. Expenses of Collection. All reasonable costs incurred by A.I.D., other than salaries of its staff, in connection with the collection of any refund or in connection with amounts due A.I.D. by reason of the occurrence of any of the events specified in Section 8.02 may be charged to the Borrower and reimbursed to A.I.D. in such manner as A.I.D. may specify.

SECTION 8.08. Nonwaiver of Remedies. No delay in exercising or omission to exercise any right, power, or remedy accruing to A.I.D. under this Agreement shall be construed as a waiver of any of such rights, powers, or remedies.

ARTICLE IX

Miscellaneous

SECTION 9.01. Communications. Any notice, request, document, or other communication given, made, or sent by the Borrower or A.I.D. pursuant to this Agreement shall be in writing or by

telegram, cable, or radiogram and shall be deemed to have been duly given, made, or sent to the party to which it is addressed when it shall be delivered to such party by hand or by mail, telegrams, cable, or radiogram at the following addresses:

TO BORROWER:

Mail Address: Secretary to the Treasury
Ministry of Finance
P.O. Box 53
Zomba, Malawi

Cable Address: FINSEC

TO A.I.D. (Three copies):

Mail Address: Office of Capital Development and Finance
Bureau for Africa
Agency for International Development
c/o A.I.D. Affairs Officer
American Embassy
Blantyre, Malawi

Other addresses may be substituted for the above upon the giving of notice. All notices, requests, communications, and documents submitted to A.I.D. hereunder shall be in English, except as A.I.D. may otherwise agree in writing.

SECTION 9.02. Representatives. For all purposes relative to this Agreement, the Borrower will be represented by the individual holding or acting in the office of Permanent Secretary to the

Treasury. Such individual shall have the authority to designate additional representatives by written notice. In the event of any replacement or other designation of a representative hereunder, Borrower shall submit a statement of the representative's name and specimen signature in form and substance satisfactory to A.I.D. Until receipt by A.I.D. of written notice of revocation of the authority of any of the duly authorized representatives of the Borrower designated pursuant to this Section, it may accept the signature of any such representative or representatives on any instrument as conclusive evidence that any action effected by such instrument is duly authorized.

SECTION 9.03. Implementation letters. A.I.D. shall from time to time issue Implementation Letters that will prescribe the procedures applicable hereunder in connection with the implementation of this Agreement.

SECTION 9.04. Promissory Notes. At such time or times as A.I.D. may request, the Borrower shall issue promissory notes or such other evidences of indebtedness with respect to the Loan, in such form, containing such terms and supported by such legal opinions as A.I.D. may reasonably request.

SECTION 9.05. Termination Upon Full Payment. Upon payment in full of the Principal and of any accrued interest, this Agreement and all obligations of the Borrower and A.I.D. under this Loan Agreement shall terminate.

IN WITNESS WHEREOF, Borrower and the United States of America, each acting through its respective duly authorized representative, have caused this Agreement to be signed in their names and delivered as of the day and year first above written.

THE GOVERNMENT OF MALAWI

By:

Alfred N. Banda

Title: Minister of Finance

UNITED STATES OF AMERICA

By:

Marshall Jones

Title:

Ambassador

ANNEX A

DESCRIPTION OF PROJECT

The project consists of the provision of materials and services required for construction of approximately 126 miles of secondary highway and structures in the Lakeshore area of Malawi. The route consists of two sections. The longer section extends northwards from a junction with the Zomba-Lilongwe highway near Balaka for a distance of about 90 miles, to the town of Salima. The section generally parallels an existing railroad connecting the two towns of Balaka and Salima. The shorter 36-mile section extends eastward from a junction with the north-south section near Mua Mission to a junction with the Monkey Bay - Fort Johnston highway on the shore of Lake Malawi. Design details include the construction of the highway embankment, a six inch gravel surface and a single bituminous surface treatment. Eleven, two-lane bridges and several major culvert structures, as well as minor drainage appurtenances are also included in the project.

The technical services and goods financed under this project will include contracts with such U.S. firms as are required to manage and supervise the construction by both Malawi public works personnel and supplementary U.S. construction expertise. The loan will also finance procurement of U.S. construction equipment and spare parts and construction materials required for construction.