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TRANSPORTATION IN SOUTHERN AFRICA:

APPLICATION OF AN ASSISTANCE

STRATEGY TO PROJECT ANALYSIS

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PREFACE

The following report has been prepared as part of the Southern Africa Development Analysis Project (SADAP) for the United States Agency for International Development (USAID) under contract number afr-C-1132. As an extension of the projected SADAP strategy for assistance to the transport sector, the report provides a methodological framework for project analysis and applies that framework to proposed transport projects. The rationale used to design the strategy was based on a preliminary survey of the region which included:

- Consultation with donor agencies or project sponsors already active in Southern Africa
- Interviews with government officials and on-site inspections in five of the countries in the region
- Analysis of programs, policies, and projects underway or proposed for each country and for the region as a whole, based on both primary and secondary sources.

Readers interested in a more detailed discussion of this survey or project background are referred to a previous report, Transportation and Telecommunication in the Southern Africa Region: An Assistance Strategy (USAID Contract No. afr-c-1132), November, 1978. Preliminary SADAP analysis combined transport and telecommunications in a single sector survey. However, the analysis presented in this report is confined to transport. For information on telecommunications the reader is advised to consult the report cited above and an earlier report, Transportation and Telecommunication in the Southern Africa Region, (USAID, Contract No. afr-c-1424), August, 1978.

For the purpose of this study Southern Africa has been defined to include those territories located south of 8 degrees South latitude: The Republic of South Africa (RSA), Lesotho, Swaziland, Namibia (Southwest Africa), Botswana, Southern Rhodesia (Rhodesia/Zimbabwe), Zambia, Malawi, and Mozambique. This definition is somewhat arbitrary, in part necessitated by practical considerations. The importance of the Benguela and Tanzam (TAZARA) railways in Angola and Tanzania, respectively, necessitates inclusion of these two countries in any discussion of transport in the region, but information concerning these two countries has been limited and fragmentary. Although the status of Namibia and Southern Rhodesia remains unsettled at the writing of this report, for the sake of analysis they are treated as equivalent to countries in the region.

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SECTION I THE BASIC RATIONALE AND STRATEGY FOR DEVELOPMENT ASSISTANCE FOR THE TRANSPORT SECTOR

I. Introduction

By the end of the 1960s it became apparent that the impact of the massive capital transfers associated with international development assistance following the Second World War was not always beneficial to developing countries. In many cases such assistance had resulted in economic growth. The benefit of such growth, however, often remained largely in the hands of the already advantaged minority. The "trickling down" of benefits to the disadvantaged masses was often blocked by various social and economic constraints. The living conditions of the poor majority--most of whom lived in rural areas--were not significantly improved. In fact, in some cases, the socio-economic gap between the poor majority and the advantaged elite had increased. The result of economic growth was not always economic development.

The United States Agency for International Development (AID) and other major international donors sought to redress this situation by targeting their assistance programs to the rural poor and, specifically, to the basic human needs (BHN) of the majority of the population in the developing countries. This new approach became the basis for the 1973 "New Directions Mandate" for AID. Programs were to be evaluated in terms of their ability to meet such BHN as food, nutrition, health, education, and family planning. Considerable emphasis was given to building new institutional structures and development of human resources. The ultimate goal was to reduce disparities between social classes as well as to make an overall improvement in the quality of life. Implementation of the new AID mandate shifted major US assistance program from infrastructure--especially transport-- and industrial projects to rural development activities.

During the 1970s initiatives were begun under the Southern Africa Development Assistance Project (SADAP) to examine assistance needs for Southern Africa. Potentially disruptive political situations in Angola, Mozambique, Southern Rhodesia, and Namibia-- as well as in the Republic of South Africa (RSA)-- called not only for short and long run planning but also for special contingency planning keyed to a variety of political scenarios. The project began with analysis of the respective national economies and proceeded to sectoral analysis on both a national and regional basis.

Preliminary analysis indicated the major constraining role played by the transport sector in Southern Africa:

- Transport was the major constraint on economic development in each of the countries included in the survey, as well as in the region as a whole.
- Transport represented a particular constraint on the implementation of a BHN strategy for assistance.
- The structural/functional characteristics of transport, especially the limited number of transport options, resulted in economic dependence on the RSA -- as well as transport links through Rhodesia for the entire region-- which in turn weakened the competitiveness of each economic system both regionally and internationally, restricted the possibility of regional cooperation, and seriously threatened the national security of each state.

One of the guidelines for SADAP analysis was representation of government perspectives concerning development assistance in all SADAP reports. Consultation with government officials at various levels revealed a serious concern with the constraining role of transport on economic development in Southern Africa, and the need for substantial development assistance for the sector. This perspective reinforces the independent analysis and field observations by SADAP consultants.

The basic rationale and strategy for development assistance to the transport sector presented in this section represents an extension of the SADAP perspective and provides the basis for the methodological framework developed in Section II.

A. Transport and Economic Development

In serving as a distributive/access mechanism for an economic system, transport is essential not only to the production function of the economy but also to the marketing of goods and delivery of services. Inadequacies in the transport sector thus limit the operations and development of all other sectors. This interdependence is complicated in Southern Africa by the systemic dimensions of transport in general and the special structural/functional characteristics of the transport system in the region in particular.

Although investment in the transport sector in Southern Africa has been substantial in several cases and represents one of the largest single items in the annual budgets of most countries in the region, none of the countries in the region has an adequate transport system.

1. Transport as a System

The servicing of distributive and access needs of an economy by the transport sector must be viewed in a systems context. No system is greater than its weakest link, and a deficiency in any part of a transport system can make the entire system ineffective. Although traditional economies are based on local exchange, developing economies require intermediate and long distance transport. Cash crops and mineral products, the major exports of most developing countries, owe their value to international marketing. Failure by any component of the transport system can deny access to these markets.

Whether the problem is a lack of basic links, transport vehicles, associated facilities or trained personnel, the end result is the restriction of efficient flow through the system. Thus, the Southern Africa farmer producing an export crop is just as dependent upon port facilities as on feeder roads. Development of transport system, therefore, requires a balancing process which neither neglects nor disproportionately develops any one component of the system.

The various components of a transport system include:

- The basic links connecting the producing units to the marketing, distribution, and/or export facilities or providing access for service delivery. This ranges from feeder, secondary, and primary roads and railways to water and air routes.
- Such associated handling and storage facilities as weigh stations, warehouses, docks, and hangars.
- Vehicles used to transport people or commodities over the basic links. These include draft-drawn vehicles, taxi-buses, trucks, locomotives and rail wagons, air planes, and water vessels.
- Equipment, ranging from hand tools to heavy machinery, and workshops necessary to maintain the system.
- Personnel possessing the skills necessary to operate and service vehicles and equipment.
- Transport institutions engaged in planning, policy-making, administration, and maintenance.

This breakdown excludes the goods and services transported by the system from the system itself. Clearly, they do not represent a part of the system, but they do play a major role in determining the structural and functional development of the system. Similarly, the efficiency of system components is a characteristic and quality of system operation rather than one of its parts.

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2. Structural/Functional Characteristics of Transport in Southern Africa

The beginnings of the present transport system in Southern Africa came with the arrival of the Europeans. With the exception of the RSA and certain coastal settlements, this took place in the nineteenth and early twentieth centuries. Economic development was largely confined to the southern portion of the subcontinent--now the RSA-- with subsequent development of extractive industries in Southern Rhodesian and Zambia. Transport links were keyed to moving minerals and primary products to the South for further processing or export.

Except for the coastal regions, transport links ran North and South. There were virtually no East-West links in the central region of the subcontinent. Subsequent modification of the transport system in Southern Africa has left this basic pattern little changed.

The structurally incomplete system inherited by the region is characterized by:

- North-South links which are most efficiently serviced by ports in the RSA. The situation has been further complicated by the closure of the Penquela Railway, operational problems for the TAZARA Railway and port at Dar es Salaam, and the closure of the Rhodesian border.
- The railway is the most developed mode; it was designed to provide heavy volume service and not to meet the needs of developing economies.
- Certain regional roads follow a rail line, but major portions are not paved or are closed to traffic at the present time. Population patterns, moreover, have encouraged disparate investment in secondary and other roads supporting primary roads.
- Trucking and busing are infant industries offering very unreliable service to a limited portion of the region.

The structure of the system is severely handicapped by functional inefficiencies, and the entire system is in a state of serious and continuing deterioration:

- There is a lack of institutional facilities to plan, coordinate, develop, and operate transport in the region.
- System maintenance is quantitatively and qualitatively insufficient to serve the existing system.
- Overuse of the existing system beyond original design specifications is widespread.
- There is a serious lack of qualified transport personnel.

B. Basic Human Needs

In addition to representing a major constraint on economic development in general, the transport sector in Southern Africa represents a particular limit on projects keyed to BHN. The failure of BHN projects frequently relates to inadequacies in the transport sector. In some cases this is the result of programs which lack such integrated transport components as feeder roads; in other cases it stems from systemic inadequacies which are perhaps a step or more removed from the actual project.

Research examining the relationship between transport investment and BHN is limited, in part a function of the newness of the BHN strategy itself. Conclusions drawn from existing research indicate the greatest impact is tied to income generation and the delivery of social services. Efforts to target impact to a particular group are complicated by various factors.¹ The importance of transport for BHN programs in Southern Africa, however, can be supported by examples directly observed or discussed with government officials in the region in conjunction with SADAP field research.

1. Agricultural Production and Food Supply

Transport has both direct and indirect impacts on agricultural production and food supply. Increased productivity does not necessarily bring an increased supply of food for family consumption, but it does increase food supply on a national level and it may also provide the producing farm family with the means to modify its diet with food purchases they could not otherwise make.

In order to increase agricultural productivity, various inputs must reach the farm. Such items as fertilizer and improved seed are but the first step. Farmers must also be taught how to use these inputs as well as how to apply better farming practices in general. The ability of extension service programs to reach target groups, however, can be affected as significantly by transport constraints as can the supply of physical inputs.

Increased potential productive capacity does not automatically result in an increase in national food supply. It is not just the arrival of the inputs but the conviction of the farmer that it is worth his while to use these inputs that results in an actual increase in production. The farmer must also be convinced that he has access to marketing services which will facilitate profitable sale and, in turn, distribution of his crop.

¹For further discussion see "AID/AFR Transport Strategy Paper," Louis Berger International, Inc., Washington, D.C., 1979.

As a result of population distribution and topography in Southern Africa, markets are usually distant from crop production areas. These may be urban areas or other rural areas which do not have the capacity to feed themselves or, alternately, whose seasonal growing patterns require shifting food from one area to another. Food crops may also be destined for marketing outside a country. Time is a very important factor in the transport of perishable food items and plays a significant role in the cost of food in the region.

Zambia provides a classic example of transport constraints on food production. Closure of the border with Southern Rhodesia in protest of the Unilateral Declaration of Independence (UDI) and termination of service by the Benguela Railway through Angola resulted in severe strain on the remaining transport links. An adequate supply of imported fertilizer could not be obtained for the 1978 planting, resulting in a predicted short crop in 1979 and a further shortage of already scarce supplies of staple foods.

Domestic distribution is also severely strained by transport inadequacies. The supply of fresh produce, eggs and butter is short in Lusaka, but there is a surplus and a potential for increased production of these items in the Northwest portion of the country. Poor transport links between this region and the capital, as well as insufficient supplies of vehicles, block agricultural distribution. New Zambian programs for increased fish production in the Northwest area also are limited by problems of distribution. Similar limits exist for rural development projects in Malawi and several other countries in the region.

2. Income Generation

Increased access to a region and for residents of a region to the national transport system can affect income generation both directly and indirectly:

- Increased access can reduce tariff and time costs of transporting items to market, thus making them more competitive both in real and perceived terms.
- Increased access can increase the number of buyers for agricultural products. If prices have been artificially held low by a monopolistic buyer, unit prices can also increase.
- Prices paid for consumer goods may fall as a result of lower transport costs--resulting in a greater real income for the farmer--and the choice of items is also likely to increase.

- Access may provide sufficient economies of scale to permit small-scale industrial development in remote areas, making local products more competitive and increasing local demand and return to the local producer.
- Increased access leads to increased traffic. This in turn can stimulate such support services as garages and offer new opportunities for employment.
- Transport projects can in themselves require labor inputs for construction and maintenance. Such employment could be short-term or seasonal and could provide either supplemental or permanent employment for underemployed workers in the agricultural sector.
- Increased access can provide off-farm employment away from home either on a seasonal or temporary basis, in both farm and non-farm employment. This can be especially important in an economy with high underemployment in the agricultural sector.

An experimental income generation program in Lesotho, for example, is attempting to standardize the production of Mohair in rural areas in order to facilitate export of the wool. The program is handicapped by lack of transport both internally and externally. Because the product is light in weight it may be possible to reach international markets by air transport. Presently the only land routes are through the RSA. The development of trucking and busing could provide income generation in all countries in Southern Africa, but road conditions seriously constrain the potential profit of such ventures.

3. Equity

Transport is a constraint on equity programs in Southern Africa mainly in terms of its impact on BHN programs. Investment in transport most directly affects the incomes of those who use the system. To the extent that such users are already innovators, they usually represent members of a locally or regionally advantaged group. Certain income benefits will be passed on indirectly to the general population of an area, but the rate and degree to which this happens will depend on the characteristics of the local economy. Transport investment will increase the relative income level of an area in relation to the rest of the country, an indirect form of equity growth. Major equity growth from transport investment is a function of the extension of social services to an area as a result of increased access. As stated above, investment in transport on the basis of equity growth must be closely linked to integrated programming in order to have the intended effect. In most cases this calls for the provision of institutional services in conjunction with the direct investment in transport.

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4. Health

The extension of health service to rural areas is dependent upon the establishment of a hierarchy of medical centers from which medical services are extended and to which the population can come for treatment. Adequate transport is necessary in order that medication and equipment, staff, and associated services can flow from the most sophisticated level to the most elementary level and so that patients needing more sophisticated skills can be referred to the next highest level of health facility.

Investment in transport can increase the effectiveness of the national medical systems in the region. It can maximize use of personnel and equipment, facilitate integrated programming, give greater impact to health education, and give support to preventative medicine. It would be especially helpful in the development of an emergency health care capacity in the region. It would also aid control of such vector carried disease as malaria, which is a major disease in all countries in the region except Lesotho. Transport inadequacies have been one of the factors leading to the pluralistic health care delivery approach in Zambia; increased access would facilitate integration of this service and reduce competitive programs which are wasteful of resources.

5. Education

The constraining role of transport on education is similar to that on the health sector, allowing for the obvious difference between an emergency health situation and personal productivity. Transport facilitates maximal use of resources for education. As in health, this is a two way process. It involves getting trained personnel to target population as well as referring a portion of the population up to higher levels of education. Access to education is a very important factor in determining the distribution of future economic benefits.

Operation of the educational system is highly dependent upon the need of supervisory personnel to travel within the system on a regular basis in order to ensure the responsiveness of the system to changing development needs. These visits are necessary for:

- Operation and administration of the system on a routine basis
 - Assessment of the system as it is operating
 - Development of programs to improve the system
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- Implementation of the programs
- Evaluation of program implementation and ultimately program effectiveness
- Improvement of instructional skills
- Supplementation of instructional skills

The transport constraint on the fulfillment of these functions is both direct and indirect and results in limitation of effectiveness not only at the lower level but also at the highest level of education. The effectiveness of the Banda Agricultural College in Malawi, for example, has been questioned by some educators not only because there have been transport problems restricting administrative and supervisory contacts but also because of the isolated location of the facility itself.

6. Housing

Improvement in housing -- as well as storage/shelter for crops and animals -- is an expensive investment for the average family in Southern Africa. This is because such investment requires the use of building materials and equipment which traditionally are neither used nor available locally. In most cases this is a question of cement and metal roofs. These materials are usually produced in or imported to urban centers. Transport limits make these components prohibitively expensive for the rural majority, and in many cases such items are unavailable at any cost. High construction cost is also a limit on government housing programs for rural populations. Reduced costs associated with increased transport access would also provide demand for construction labor and thus assist in income generation.

The transport constraint is especially restrictive in Swaziland and the interior of Lesotho. The situation is the result of both inadequacies in the road system and the short supply of vehicles to take commodities from railroad depots to construction sites even over existing roads. Construction materials are sometimes even lashed to the top rails of buses; this is neither a very safe nor reliable means of supply.

The situation is serious throughout all of Zambia; major construction in the capital itself has been delayed for several years as contractors wait for shipments of cement.

The situation has associated sector constraints as well. Firms in Swaziland with over 25 employees are required to transport their personnel to locally available housing or else to

construct on-site housing. As a result, firms concentrate in areas where the transport option is possible, even at the cost of other economic considerations.

7. Other

Transport represents a constraint on various other social or human needs the value of which may not be directly expressed in economic terms but which represent important psychological dimensions for both economic development and nation building. The most immediate need relates to building a sense of nationality and identification by the majority of the population with the political/administrative system and, conversely, identification by representatives of the system with the masses of the people. The very presence of representatives of the government in rural areas and the ability of the system to serve everyday needs as well as emergency situations -- a key to this two-way process of identification -- is tied to the transport system. Topography, population patterns, and the dynamics of potential disruption in the region complicate the process of nation building and reinforce the role of transport in that process.

III. Economic Dependency

The constraining role of transport on economic development in general and on the achievement of a BHN strategy in particular is present in all developing regions in the world. The impact of this constraint in Southern Africa is greater than in other regions, however, not only because of the particular structural/functional characteristics of the transport system but specifically because of the impact these characteristics have on economic dependency.

Two major elements are involved. First, as the area was demarcated into territories and as these territories sought independence, a cluster of land-locked states evolved whose only access to the coast was through a neighbor. Thus, today Botswana, Zambia, Southern Rhodesia, Malawi, Swaziland, and Lesotho do not have their own ports. The situation is complicated by the fact that there are few transport options in the region and that reliance on a single major transport link for import/export flow is the rule rather than the exception.

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Three major elements are involved. First is the fact that as the area was demarcated into territories and as these territories sought independence, a cluster of land-locked states evolved whose only access to the coast was through a neighboring territory. Thus it is that Botswana, Zambia, Southern Rhodesia, Malawi, Swaziland, and Lesotho do not have independent control over the flow of imports to and exports from their economies. The situation is especially difficult for Lesotho, which is completely surrounded by the RSA and has no border with another country.

The dependent position of a land-locked state is clearly a serious disadvantage. Setting aside strategic and political considerations, the added transport costs and time delays involved in border crossings increase the basic unit cost and availability of imports to the land-locked state, as well as reducing the international competitiveness of exports of that state. The entire process is a complex chain, involving many factors which are not under the control of the land-locked state itself. The land-locked state is dependent upon the efficiency of not only its own transport system but also that of the transit state. Coordination and communication with port officials and service representatives for such various services as transshipment from one mode to another, compensatory claims, storage, and customs clearance provides an additional layer of administration which can either intentionally or unintentionally delay transport.

The second element arises from the fact that there are few transport options in the region; reliance on a single major transport link for the flow of imports and exports is the rule rather than the exception. For optimal effectiveness all transport systems should have more than one primary route, but in the case of land-locked states it is vital that there be at least two primary routes to port facilities, preferably through two different neighboring territories.

The strategic risks of reliance on a single transport link are obvious. The situation is made more serious, however, because of inadequate maintenance and the deteriorated condition of existing transport components in the region ---in turn complicated by environmental threats --- which intensify the risks associated with a single link. Heavy rains in Zambia last year, for example, seriously damaged the major lateral trucking route, further restricting import/export flows.

The third element is political, stemming largely from present policies of the RSA and Southern Rhodesia or potentially disruptive changes in either country. The economic strength of the RSA and the transport linkage role of Southern Rhodesia give them unusual significance in regional transport, but it is the political dimension which makes these two countries unacceptable, or at least uncertain, partners in the transport of goods and services which are not only vital for economic growth but are essential to national survival.

The unacceptability of the RSA as a transport partner is a function of specific actions taken by the RSA to erode the competitiveness of the black majority rule countries and to maintain its dominance in the region. Although it is not always clear whether these actions represent the extension of coordinated government policy, set in the context of apartheid, or ad hoc government responses to pressure from corporate interests with the RSA, the result is the same. In regard to the BLS countries, for example, the RSA exerts major control through the customs union. The government also uses transport regulations and quota systems to restrict the development of non-RSA trucking firms. It can take months for certain shipments to go from RSA ports to their destinations if RSA officials so choose, and shipments can even be lost. Distributors who sell products which compete with RSA products can be threatened with a cut in the supply of all RSA products.

The situation is complicated by the fact that the RSA is not only a major link for imports and exports in the region, but is also a major supplier of essential goods and services. This is especially true of food for the BLS countries. Fresh produce, milk, eggs, fish, and even some meat are supplied by the RSA. Mozambique also receives some shipments of foodstuffs from the RSA. Local supplies of these products could be developed, but transport constrains their distribution. The RSA also supplies various essential technical services such as engineering and the maintenance and repair of equipment.

An equally serious problem is the uncertainty of transport policies in the region, both in the RSA and Southern Rhodesia. It is questionable whether the RSA will be able to maintain the level of transport service presently provided to the region while meeting increasing RSA domestic economic and security needs. Though it is difficult to envision a total collapse of the RSA economy and the transport system in particular, transport service for the region could easily be disrupted by even small scale guerrilla action. Similarly, service could be cut by the RSA

itself if transport resources were needed to meet domestic needs in case of either a political or economic crisis.

It should be restated that the SADAP rationale for transport investment in Southern Africa does not seek elimination of economic dependency on the RSA but rather modification of the dependency situation. The dynamics of the RSA economy suggest an important future role for the country in the region. The goal of external assistance to the region should be to eliminate the exploitive elements of the relationship. Where cooperation with the RSA can be profitable for the lesser developed countries in the region, it should be encouraged. Care should also be taken so that regional programs for reduced dependence on the RSA do not end by creating dependency upon some other country or international agency.

The uncertainty of Southern Rhodesia as a transport partner is a function of several variables. The role Southern Rhodesia played in linking Zambia and Botswana to Mozambique ceased when the front line states surrounding Southern Rhodesia closed their borders with Southern Rhodesia after UDI. The Spring 1979 elections in Southern Rhodesia and Great Britain opened the way to re-opening of the border. For this to happen, however, the front line states will have to concede the fairness of the elections. The movement of freight and passengers across the border, moreover, could still be disrupted by guerrilla activity if the African guerrilla leaders who did not participate in the elections in Southern Rhodesia continue their opposition to the newly elected government.

Even with an optimal resolution of the political conflict, the ability of Southern Rhodesia to fulfill its former linkage function depends on the efficiency of the Southern Rhodesian transport system itself. The departure of expatriate or white Southern Rhodesian transport personnel could have a negative effect on operations. Even if this does not happen, the currently deteriorated state of the transport system in the country would seriously restrict the safety of high volume or heavy weight traffic. Resources for maintenance have been scarce since UDI and have been diverted to the service of domestic links. At present the best maintained tracks link Rhodesia to the RSA rather than to Mozambique. Similarly, the willingness of Rhodesian Railways to operate facilities in Botswana may have a short future.

The SADAP rationale for investment in the transport sector of Southern Africa is clearly set in the context of emergency and crisis planning. Events have already unfolded which make it too late to avoid human suffering as a result of transport constraints.

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What remains possible is to provide new structural and functional dimensions for transport in the region so that future suffering may be reduced. The breakdown of regional transport associated with some of the political scenarios projected for Southern Africa could result not just in human deprivation but wide-spread loss of life. The SADAP initiatives are intended to address and, if possible, to prevent this outcome.

III. A Strategy for Development Assistance

A. Assumptions

The multiplicity of problems which characterize the transport sector, on the one hand, considerably complicate the formulation of a development strategy for Southern Africa, but, on the other hand, make such formulation an imperative. Most significant among the factors are:

- The high cost of infrastructure development.
- The amount of development needed.
- The scarcity of development resources.
- The structure and functional effectiveness of the alternate transport modes.
- The dependence of the land-locked states.
- Potential political instability.

Time is a crucial factor, moreover, and the situation could soon reach crisis proportions. The slow strangulation of the Zambian economy, for example, could shift rapidly to a nation-wide famine by the 1979 harvest.

In designing the strategy presented here the following assumptions were made:

- Countries in the region lack sufficient resources to develop transport infrastructure by themselves and will need both technical and capital assistance.
 - Countries throughout the region are interested in receiving both capital and technical assistance.
 - Assistance by the international community to the region will come from multiple donors.
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- Economic return on investment will be one criterion in determining investment targets, but such other factors as security, basic human needs, and social development objectives must be primary considerations.
- Although it is to be hoped that political settlements will be reached with only minor disruption to the transport sector and transit routes now closed will be reopened, the slow pace at which settlements are being achieved, the possibility that the outcome may not be peaceful, and increasing transport demand requires additional investment in the sector.

B. Basic Development Policy and Strategy

The following policies are associated with the basic development strategy outlined above:

- Reduced dependence by the land-locked states on the peripheral states should be a major goal of all assistance. The development of transit routes should be given priority, and all countries should have more than one route to an ocean port.
- The development of domestic routes should consider regional transit requirements as well as service to domestic centers of production and markets.
- Capital investment in lateral routes providing East-West access would provide major benefits for the region. However, the cost of such routes must be carefully considered.
- Long-term impact from investment in transport requires maintenance support and manpower training. Capital assistance for associated equipment may be required but should not dominate project planning.
- Reduced dependence by all countries in the region on the RSA should be a primary interest. Such dependence cannot be eliminated but can be balanced and adjusted.
- The regional linkage role of Southern Rhodesia needs to be reassessed.

- The impact of investment in transport should be maximized through integrated planning which considers the full range of development projects presently underway or planned.
- Reliance on rail transport should be reduced where feasible and truck transport correspondingly stimulated for both transit and domestic traffic.
- Assistance should include selective development of feeder links including roads, civil aviation, and telecommunication.
- Labor intensive activities should be utilized where appropriate, but in view of the emergency time frame, must be carefully appraised in terms of added cost or time delays.
- Human and social development should be promoted by assistance to the transport sector using the same appraisal as for labor intensive activities.
- Serious consideration should be given to the development of public and private institutions necessary to support national transport systems and regional cooperation.

The basic SADAP strategy is divided into three time frames:

- Immediate Stage 1979/80 - 1980/81
- Intermediate Stage 1981/82 - 1985/86
- Extended Stage 1986/87 - extended

The dates associated with these stages are somewhat arbitrary and are provided as guidelines to interrelated project priorities. Adjustment of these dates may be required, especially in view of the delayed settlement in Namibia and possibly for Southern Rhodesia as well.

1. The Immediate Stage - Emphasis during this stage is keyed to keeping the existing transport systems operational and preparing for large-scale investment in the next stage. In most cases, technical assistance offered during this stage will extend into the intermediate stage. Capital assistance during this phase will be

tied to operational needs and selected emergency projects. Various negotiations and arrangements necessary for progress to the intermediate stage will also be undertaken.

Manpower Training - In view of the dimension of the manpower shortage in every country, immediate attention must be given to training. National programs offering basic and mid-range skills should be supplemented with international programs until regional training centers can be opened during the intermediate stage. A survey of the existing educational system should be made and structural changes recommended if necessary.

Maintenance - Specific attention must be given to maintenance of the existing system as well as to the equipment used to provide this service. Classroom instruction may be useful, but special emphasis should be given to on-the-job training with equipment in operation.

Feasibility and Design Studies - Assistance must be given for the full range of design studies necessary for major capital investment in the intermediate stages.

Associated Technical Assistance - All technical assistance should include counterpart training with phased assumption of operations by nationals as soon as possible and where feasible, but considerable assistance in the form of management, technical, and administrative specialists will be necessary. The existing shortage of these skills will become more serious with the anticipated investment of the intermediate stage.

2. The Intermediate Stage - During the intermediate stage, major capital projects should be initiated for which feasibility and design studies have been completed. Training and other technical assistance should continue and regional training programs should be ready for implementation. Feasibility studies for the extended stage that have not already been undertaken should be carried out.

Additional surveys of resources, economic analysis---including trade flows--and reappraisals of the political situation in Namibia and Southern Rhodesia should be undertaken. The situation in the RSA and its impact on development of the region as a whole should be reexamined.

3. The Extended Stage - Again, certain projects undertaken earlier will continue into this phase. Selected large scale projects will then be initiated. Nationals trained under the first two stages should be playing an increasing role at all levels. Manpower and training needs for the long run should be reassessed and appropriate adjustments made.

PART II:

SADAP: PROPOSED PROJECTS FOR THE TRANSPORT SECTOR, IMMEDIATE STAGE

Introductory Note:

The following discussion and list of transport projects for Southern Africa is based on proposals included in the preliminary SADAP transport survey. Project selection was based on a strategy which presented transport as a major constraint upon:

- the development of key economic sectors in the region,
- the attainment of basic human needs,
- the reduction of dependency on the RSA, the advancement of regionalism, and the maintenance of national security.

In the preliminary survey, projects were classified according to the need for immediate, intermediate and extended consideration. The analysis and project development presented here is confined to projects listed under the immediate category. All projects have been designed and costed for implementation over a two-year period.

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I. Regional Projects

The original SADAP terms of reference emphasized regionalism as both an analytical and practical framework for discussion. This emphasis has been somewhat eroded over time. It remains a major recommendation of this report that -- especially for the rail and civil aviation sectors -- regional training centers for intermediate and higher level training be established and given multi-donor support.

Desperate situations in the region, including unresolved political situations, restrict the present opportunities to implement regional programs. It is to be hoped that a regional approach will evolve for donor assistance to Southern Africa. The establishment of institutional structures or mechanism to coordinate donor assistance is recommended and anticipated as an outcome of donor meetings planned during the remainder of 1979. Until after these meetings and the expression of donors and host countries interest in regional projects, however, it is premature to propose large scale regional programs. This issue is discussed more fully in the last section of the report.

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One project requires a regional approach because of its very nature. This is a feasibility study for providing direct air service between the BLS countries, possibly also including Malawi and/or Zambia.

Existing service requires reliance on Johannesburg for connections between the BLS rather than direct routing. This involves time delay as well as dependence on the RSA. The cost savings of a joint airline could be important, and joint training programs might evolve as well.

Project Components: Approximately 24 person-months of services, to include an Airport Operations Specialist, an Airport Maintenance Engineer, a Transport Economist, a Financial Analyst, and an Organization and Management Specialist. It is estimated that the study could be completed in about six months.

Estimated Cost: \$200,000.

II. Botswana

The absorptive capacity of the economy must be carefully considered in all development proposals for this country. Numerous projects are already underway and manpower is excessively

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scarce. Maintenance of the existing system, and of equipment in particular, is a major problem. Resolution requires both technical and capital assistance. Transport planning is constrained by manpower shortages which have not only delayed completion of the master plan for transport under the National Transport Plan, Phase II, but also prevented various key studies in passenger and freight transport.

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Manpower development for the transport sector is restricted more by institutional factors than by financial limitations. Several reports on manpower needs relevant to the transport sector have been made but vary in terms of data base, year, or other factors. Training to meet these needs is constrained by inadequate supply of trainees, in turn reflecting both population size and structural/functional aspects of the educational system. Immediate policy for manpower development must be structured to provide a broader base of mid-level skills, even at the cost of continued use of expatriates to staff positions requiring higher qualifications. Innovations in training need to be considered.

This study is designed to draw upon and update existing manpower documents related to the transport sector. Primary tasks would include:

- (1) analysis of factors draining manpower from the public to the private sector;
- (2) identification of key skill categories and levels presently in short supply in transport and projected emergency needs;
- (3) analysis of educational barriers to supply of qualified trainees; and
- (4) development of a proposed training program to overcome these deficiencies.

Project Components: 4 person-months of services.

Estimated Cost: \$50,000.

Technical Assistance and Training in Road Maintenance and Associated Capital Assistance for Equipment

A PID for this project has been submitted by the Mission to AID/W. It includes \$5 million for equipment and \$1 million for technical assistance and training. Because the funds for this

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project are presently programmed, it is not included in the overall estimate of costs for the future SADAP program in the transport sector.

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Transport management and development is seriously affected by manpower shortages. The GOB has identified three major areas where it feels there is a need for technical assistance. The first two concern truck transport. The new Transport Division of the Roads Department became operational in 1976. The ability of this department to manage transit traffic and to control axle weights is not very effective. Statistical information is very inadequate and needs upgrading, and improved methodology for traffic counts needs to be introduced. At present, trucking is dominated by foreign firms; over 60% of domestic firms have only one truck and very few have more than five. There is a high failure rate, in part a result of the high cost of working over poor roads. This industry could be vital if instability develops in either Southern Rhodesia or the RSA and would be essential to link into the Namibian transport system.

The project is keyed to staff development in the Ministry of Works and Communications, especially in the Department of Roads. The objective is to enhance institutional capacity in three areas:

- (1) Transport Policy and Traffic Regulation
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- (3) Engineering and Design Capability

Project Components: Four and a half person-years of technical assistance, to include: an Engineer/Team Leader (2 years), a Transport Planner (2 years), and a Trucking Industry Specialist (6 months).

Estimated Cost: \$450,000.

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The IBRD is doing the feasibility study for either bitumen or high traffic gravel standard for 125 miles of partially improved road in Luli Block. They will also do the design if warranted, but it is expected that only Martin's Drift Palapye will be feasible unless additional rural development programs are implemented. This project would tie an agricultural region into the national economy as well as satisfy security considerations.

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- 1) the inner circle route to Nata
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It is possible that cattle could be trucked over this route. It could be a vital link if instability develops in the RSA and Zimbabwe-Rhodesia.

Project Components: The study would cover feasibility and final design of upgrading 550 kilometers of marked track across the Kalahari to gravel light traffic, moderate speed standard road. It would facilitate production and distribution of agricultural products and contribute to income generation in a remote area. The project would include a dryland stabilization component and a special study of maintenance requirements. The Mission expects to receive Terms of Reference for this study from the GOB.

Estimated Cost: \$1,000,000.

Feasibility and Design Study, Ganyi-Mamono Road

This road would provide access to Namibian transport system and would eventually serve as a link in the Trans-African Highway. It would facilitate reduced dependence on the RSA and could be a

vital link if conditions in Zimbabwe-Rhodesia or RSA deteriorate.

Project Components: The project includes feasibility and final design of upgrading 127 miles of partially improved marked track to gravel, light traffic, moderate speed standard road. Due to expected border traffic customs control provisions should be included. The project will provide access to an agricultural zone.

Estimated Cost: \$500,000.

Railroad Equipment

Railroad projects have recently been de-emphasized by the GOB. However, there is still a requirement for certain types of capital assistance. AID might be interested in providing locomotives which could be leased to Zimbabwe-Rhodesia railways. This would provide training for Botswanan railway crews and would also provide insurance in case Rhodesia fails to continue to operate the railroads in Botswana.

The exact list of equipment to be provided should be determined in collaboration with the Botswana/Rhodesia Joint Working Committee. The preliminary cost estimate is based on the locomotive needs identified by Transmark, a consultant to the Joint Working Committee.

Project Components: 16 locomotives.

Estimated Cost: \$8,000,000.

III. Lesotho

Although transport has always been complicated by dependence on the RSA as the single transit route for imports and exports, the closure of the Transkei border has necessitated rerouting of domestic traffic to Maseru and Mafeteng. Negotiations with the RSA over transit traffic has been hindered by staff limitations. A major survey of the transport sector was begun in the fall of 1978 and is scheduled for completion in early 1980. Assistance offered in the intermediate and extended stages will need to be considered after review of this survey. Certain projects likely to conform with survey recommendations, however, can be identified for immediate consideration.

Technical Assistance and Training and Associated Capital Costs
for Road Maintenance

In view of substantial construction underway or projected for the near future, resulting in a system over twice the length of existing roads, it will be necessary to upgrade road maintenance capacity both qualitatively and quantitatively. Included should be a phased training program meshed with construction underway and associated vehicles and equipment.

Cost estimates are purely hypothetical at this point. Specific project elements, especially equipment requirements, should be determined according to the findings of the National Transport Study, scheduled for completion in January 1980.

Project Components: 7.5 person-years of technical assistance (three persons for two years plus short-term specialists)

Training
Equipment

Estimated Cost: \$2,500,000.

Technical Assistance and Training in Freight Haulage, Transport
Regulation and Development

GOL freight haulage regulations essentially represent an extension of RSA policy and interest. Assistance is needed in appraisal of these regulations and renegotiation of terms with the RSA for transit traffic. The GOL has established parastatal organizations to handle passenger and freight transport. National transport needs cannot be handled by these organizations above, but recent attempts at regulation have seriously restricted private operators. Transport policy capability also needs upgrading.

The project would provide technical assistance for the development of:

- (1) Freight haulage regulations
- (2) Public and private road transport industry
- (3) Institutional capacity in transport planning and policy making

Project Components: 2.5 person years of services (one long-term advisor for two years and two short-term specialists for three months each).

Estimated Cost: \$250,000.

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Technical Assistance and Associated Capital Costs for Containerization (Rail/Road Link and Road Transport)

In view of the restrictions placed on truck traffic by the RSA, containerization could greatly facilitate commodity flows. The project may have to be increased if existing warehouse facilities cannot handle containers because of increased volume. Once the road is upgraded, containers may be used for all shipping, alleviating the effects of closing the Transkei border.

Project Components: 12 person-months of specialized services, to include preliminary planning for equipment purchase and installation, supervision of initial operations, and training in equipment operation and maintenance.

Equipment purchase and operation (to include containers and handling equipment, 10 railway flatcars, and personnel costs).

Estimated Cost: \$650,000.

Technical and Capital Assistance for Airport Operation and Maintenance, Safety and Navigational Equipment

Safety and general operations at the airport need considerable upgrading and this cannot wait until a new facility is constructed. A diagnostic study is recommended for detailed project design and costing of the equipment component recommended for first phase of project. A training program should also be included.

Project Components: 2.5 person-years of services (1 long-term advisor for two years and two short-term instructors).

VDF navigational equipment and safety equipment.

Training equipment.

Estimated Cost: \$800,000.

V. Swaziland

Past achievements in road construction are being eroded by insufficient maintenance capability, and transport policy and planning need additional support. Sufficient donor interest exists for rail transport, but civil aviation needs additional assistance in order to ensure safe operation.

Technical Assistance and Training in Transport Management

Staff capability is weak and strained by manpower considerations both in terms of general policy development and such specific skills as statistics. This project and the Road Maintenance Project which follows it might be merged.

Project Components: Two long-term advisors (a transport planner and a statistician) for two years each.

Estimated Cost: \$400,000.

Technical Assistance and Training and Associated Capital Assistance for Road Maintenance

Deterioration in the condition of the existing road system since 1975 and projected additions to the system indicate an urgent need for support to road surface maintenance and vehicle/equipment maintenance. Assistance has been provided for a new CTO workshop at Mapsops but assistance is needed to upgrade five other workshops. The detailed project design should be coordinated with ODM technical assistance efforts in this area.

Project Components: Six person-years of technical assistance (three advisors for two years each, including a Highway Engineer, an Equipment Maintenance Expert, and a Master Mechanic).

Improvements to five regional workshops.

Estimated Cost: \$2,100,000.

Technical Assistance and Associated Capital Assistance in Airport Operations and Maintenance

Continued use of the present facility will require not only training but also additional equipment and improvements to the runway surface. Certain costs have been covered by the GOS and other costs must be carefully considered in view of a projected new airport. The GOS has prepared a project document including plans for expansion and upgrading of the present facility. However, the proposed program includes only assistance required for successful airport operation and maintenance.

Project Components: Fire and safety equipment and radio navigation equipment.

Runway and taxiway improvements

Training Program

Estimated Cost: \$1,200,000.

Feasibility and Preliminary Design Study for an International Airport

Even after upgrading, the existing airport cannot handle projected demand and does not adequately support security interests. Relocation and construction of a new international airport is sought. A master plan for this project is needed. Feasibility of such an investment needs further examination, especially in view of the rather high cost estimate of over \$700 million.

Project Components: Feasibility study, preliminary design and master plan for airport development.

Estimated Cost: \$100,000.

IV. Malawi

Malawi has achieved impressive results in the development of transport and has tied expansion of the sector to programs for administrative, social, and economic integration. Although certain key road links remain constraints on specific development proposals underway or planned for the near future, donor support is adequate to meet present needs. The most pressing needs concern possible development of lake traffic and intermodal linkages.

Technical Assistance for Transport Policy Study

Although considerable progress has been made in upgrading the capability of transport policy staff, the threatened deterioration of the road system, the impact of a reopened border with Zimbabwe-Rhodesia, and inefficiencies in intermodal linkage requires prompt consideration. The proposed transport policy study would address the following issues:

- 1) Traffic regulation
- 2) Transit traffic allocation
- 3) Road/lake traffic linkages
- 4) Road/rail linkages
- 5) Resource requirements, including training, to implement proposed policy changes.

Project Components: One long-term advisor for two years and six months of specialist services.

Estimated Cost: \$250,000.

Rehabilitation of the Plateau-Monkey Bay Route (Project #12)

The importance of this project should be determined as a function of planned Lake Region development activities. The project would be vital to the development of Monkey Bay as a major tourist facility and/or lake port. It would also provide an improved link between the internal and lakeshore road systems.

Project Components: Feasibility and final design study for rehabilitation of approximately 60 miles of paved road.

Estimated Cost: \$500,000.

Feasibility Study of Lake Traffic Development

Although both passenger and freight traffic are present on Lake Malawi, the mode has not received as much attention as other modes. Development has so far been piecemeal and there is a serious need for an integrated development plan. Economic operation will require development of intermodal linkages, reduction in freight flow imbalances, and use of larger vessels than can be presently handled. The relationship of lake traffic to tourism and other lake projects needs to be considered. Development is presently controlled by several government agencies and the creation of a Labor Department Authority should be considered.

Project Components: A technical assistance team of three experts (a port engineer, a shipping specialist, and a transport economist) is proposed to carry out the study, with a provision for up to nine months of additional specialist services in the areas of port organization and management, maintenance of port facilities, and training. A training program for diesel mechanics, deck officers and marine engineers is envisaged. The project would include the design of training facilities and development of specifications for new port facilities and equipment. Malawi Railways would probably be the executing agency.

Estimated Cost: \$450,000.

Technical Assistance and Training in Manpower Development for Aviation

The GOM has various training programs underway but needs to expand or augment domestic training and fellowships. Certain needs are keyed to development of the new airport, but assistance can be provided which fits both present and proposed needs. This would include upgrading existing training in safety, further training of ground crews in airport operation and aircraft maintenance, and training of local flight crews.

Project Component: One Training Specialist for two years, plus short-term specialists for on-the-job training.

Fellowships for higher level training.

Estimated Cost: \$1,500,000.

V. Zambia

The economic situation in Zambia is extremely serious. The shortage of foreign currency has resulted in a shortage of equipment, spare parts, fuel, and lubricant. Although, in order to promote efficiency, the military now operates the CTS, the availability of equipment for road maintenance is still below 30 percent. The Department of Roads has only 50% of its projected staff, and the Spring rains of 1979 left 45% of the national road system impaired. The ability of the government to meet recurrent local costs has been a constraint on large scale assistance projects in several instances.

Technical and Capital Assistance, Emergency Supplement to Road Maintenance

This project is intended to supplement the IBRD Third Highway Project (Road Maintenance) and is keyed to repairing recent deterioration of road surfaces. Road construction in Zambia has been well executed and it is the opinion of the IBRD that much of the system can be saved by resealing or resurfacing of previously constructed roads. The IBRD loan has yet to be executed because of problems over local funds and may have to be renegotiated

This project is divided into two phases. The first phase involves identification of needs to be examined for rehabilitation and an appraisal of what can be done to salvage these roads. This is a serious need not covered by the IBRD project but which would facilitate start-up of the road rehabilitation program. The second

phase includes technical assistance and training in vehicle and equipment maintenance and repair, provision of equipment, spare parts and POL needed to carry out a portion of the proposed program.

Project Components: 18 months of technical assistance services for Phase I.

Three person-years of technical assistance and training for Phase II.

Equipment, parts and POL.

Estimated Cost: \$7,950,000.

Technical Assistance and Associated Capital Assistance for Road Transport Development

The National Transport Corporation needs support in order to ensure continued trucking operations. This involves capital assistance for the Group Inspectorate of all subsidiaries, capital assistance for Freight Holdings Limited, and training associated with the equipment.

Project Components: Vehicles, spare parts, tools, and radio equipment for the Group Inspectorate.

Workshop equipment, spare parts, and tools for Freight Holdings Limited.

Technical assistance to the NTC (one advisor for two years).

Training program (short-term specialists and training materials).

Estimated Cost: \$3,500,000.

Technical Assistance and Training for Road Transport Management and Development

This project is intended to support and upgrade transport planning capabilities for overall road development.

Project Components: Four person-years of technical assistance (one highway engineer and one transport planner for two years each), to include counterpart training.

Construction of two houses.

Estimated Cost: \$500,000.

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Engineering Design for Zambia-Angola Road (Kaoma-Zambezi-Chevuma)

This road would provide a road link into Angola to mesh with a road link being upgraded there which would provide access to the Benguela railroad. Construction may require assurances that the GOA could maintain security along the corridor to the rail line.

Project Components: The project includes preliminary design, feasibility study and final design for approximately 120 miles of new road construction to paved secondary road standards. Logistic support will be a major problem for the design team as well as for the construction contractor.

Estimated Cost: \$7,000,000.

Engineering Design for Chembe Bridge

This bridge would provide a link between the northern agricultural product zone where there are several rural development projects -- and the Copper Belt consumer zone. At present there is only a very indirect road link which has seriously deteriorated at key points. There would also need to be upgrading of road links approaching the bridge to handle increased traffic links.

Project Components: The project includes the bridge design and an appraisal of associated road rehabilitation or upgrading requirements.

Estimated Cost: \$500,000.

Technical and Capital Assistance for Railway Rehabilitation Maintenance and Upgrading

This project is designed to rehabilitate the railway system and to provide a permanent maintenance capability. It also includes reconstruction of the Kafue railway bridge and a study for future rail electrification. The IBRD has committed full foreign cost funding of over \$100 million for this project. It is now expected that the project will begin in January 1980. Therefore, it is not included in the proposed SADAP program.

Technical and Capital Assistance in Civil Aviation

This project would provide fellowships, training and equipment to upgrade ground operations. There is a serious need for this project just to keep the airport operational, especially with end of support for ZASTI.

Project Components: Safety and fire equipment, communications equipment.

Fellowships in airport operation and management.

Technical assistance and training in aircraft and equipment maintenance.

Estimated Cost: \$1,600,000.

Program Summary

The preliminary cost estimates given above indicate that the immediate unmet needs in the transport sector of these five countries in Southern Africa correspond to an investment of approximately 43 million dollars over the next two years. Slightly over half of this amount represents a need for capital assistance. (This amount could be greatly increased when the road rehabilitation assistance requirements in Zambia are identified in the IBRD Third Highway Project.) The remainder represents a need for technical assistance, feasibility studies for future capital projects, and training.

Well over half of the total program is destined for Zambia, even though Zambia's major needs in the railway sector will be met through a presently programmed World Bank project. Investment needs in Botswana account for about \$10 million or about one-quarter of the total. The BLS countries together require assistance amounting to about 18 million dollars. Malawi is the most favorably placed at the present time with respect to transport investment; its requirements amount to less than \$3 million, all in technical rather than capital assistance.

TABLE 1
SADAP TRANSPORT SECTOR PROJECTS
AND PRELIMINARY COST ESTIMATES

	Cost Estimates (000)		
	<u>Technical</u>	<u>Capital</u>	<u>Total</u>
Regional Airline (Feasibility Study)	200		200
<u>Botswana</u>			
Manpower Study	50		50
Road Maintenance ¹	(1,000)	(5,000)	(6,000)
Management Study	450		450
Kanye-Ghanzi Road	1,000		1,000
Ghanzi-Mamono Road	500		500
Railroad Equipment		8,000	8,000
TOTAL BOTSWANA	<u>2,000</u>	<u>8,000</u>	<u>10,000</u>
<u>Lesotho</u>			
Road Maintenance	1,000	1,500	2,500
Management Study	250		250
Road/Rail Link	150	500	650
Airport O & M	300	500	800
TOTAL LESOTHO	<u>1,700</u>	<u>2,500</u>	<u>4,200</u>
<u>Swaziland</u>			
Management Study	400		400
Road Maintenance	1,100	1,000	2,100
Airport O & M	300	900	1,200
TOTAL SWAZILAND	<u>1,900</u>	<u>1,900</u>	<u>3,800</u>
<u>Malawi</u>			
Transport Policy Study	250		250
Plateau-Monkey Bay Road	500		500
Lake Traffic Study	450		450
Airport O & M	1,500		1,500
TOTAL MALAWI	<u>2,700</u>		<u>2,700</u>

Cost Estimates (000)

	<u>Technical</u>	<u>Capital</u>	<u>Total</u>
<u>Zambia</u>			
Road Rehabilitation ²	450	7,500	7,950
Support to Trucking Industry	300	3,200	3,500
Transport Planning Assistance	500		500
Zambia-Angola Road	7,000		7,000
Chembe Bridge	500		500
Airport O & M	1,600		1,600
TOTAL ZAMBIA	<u>12,600</u>	<u>16,700</u>	<u>29,300</u>
TOTAL SADAP TRANSPORT PROGRAM	<u>19,700</u>	<u>23,300</u>	<u>43,000</u>

NOTES:

1. Presently programmed funds not included in proposed program total.
2. Preliminary estimate of possible AID participation. Equipment needs may actually be much greater than the amount indicated under capital assistance.

PART III

SADAP: PROPOSED PROJECTS FOR THE TRANSPORT SECTOR, IMMEDIATE STAGE

Introductory Note:

The following discussion and list of transport projects for Southern Africa is based on proposals included in the preliminary SADAP transport survey. Project selection was based on a strategy which presented transport as a major constraint upon:

- the development of key economic sectors in the region,
- the attainment of basic human needs,
- the reduction of dependency on the RSA, the advancement of regionalism, and the maintenance of national security.

In the preliminary survey, projects were classified according to the need for immediate, intermediate and extended consideration. The analysis and project development presented here is confined to projects listed under the immediate category. All projects have been designed and costed for implementation over a two-year period.

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Desperate situations in the region, including unresolved political situations, restrict the present opportunities to implement regional programs. It is to be hoped that a regional approach will evolve for donor assistance to Southern Africa. The establishment of institutional structures or mechanism to coordinate donor assistance is recommended and anticipated as an outcome of donor meetings planned during the remainder of 1979. Until after these meetings and the expression of donors and host countries interest in regional projects, however, it is premature to propose large scale regional programs. This issue is discussed more fully in the last section of the report.

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Existing service requires reliance on Johannesburg for connections between the BLS rather than direct routing. This involves time delay as well as dependence on the RSA. The cost savings of a joint airline could be important, and joint training programs might evolve as well.

Project Components: Approximately 24 person-months of services, to include an Airport Operations Specialist, an Airport Maintenance Engineer, a Transport Economist, a Financial Analyst, and an Organization and Management Specialist. It is estimated that the study could be completed in about six months.

Estimated Cost: \$200,000.

II. Botswana

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scarce. Maintenance of the existing system, and of equipment in particular, is a major problem. Resolution requires both technical and capital assistance. Transport planning is constrained by manpower shortages which have not only delayed completion of the master plan for transport under the National Transport Plan, Phase II, but also prevented various key studies in passenger and freight transport.

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Manpower development for the transport sector is restricted more by institutional factors than by financial limitations. Several reports on manpower needs relevant to the transport sector have been made but vary in terms of data base, year, or other factors. Training to meet these needs is constrained by inadequate supply of trainees, in turn reflecting both population size and structural/functional aspects of the educational system. Immediate policy for manpower development must be structured to provide a broader base of mid-level skills, even at the cost of continued use of expatriates to staff positions requiring higher qualifications. Innovations in training need to be considered.

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- (2) identification of key skill categories and levels presently in short supply in transport and projected emergency needs;
- (3) analysis of educational barriers to supply of qualified trainees; and
- (4) development of a proposed training program to overcome these deficiencies.

Project Components: 4 person-months of services.

Estimated Cost: \$50,000.

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Project Components: The study would cover feasibility and final design of upgrading 550 kilometers of marked track across the Kalahari to gravel light traffic, moderate speed standard road. It would facilitate production and distribution of agricultural products and contribute to income generation in a remote area. The project would include a dryland stabilization component and a special study of maintenance requirements. The Mission expects to receive Terms of Reference for this study from the GOB.

Estimated Cost: \$1,000,000.

Feasibility and Design Study, Ganyi-Mamono Road

This road would provide access to Namibian transport system and would eventually serve as a link in the Trans-African Highway. It would facilitate reduced dependence on the RSA and could be a

vital link if conditions in Zimbabwe-Rhodesia or RSA deteriorate.

Project Components: The project includes feasibility and final design of upgrading 127 miles of partially improved marked track to gravel, light traffic, moderate speed standard road. Due to expected border traffic customs control provisions should be included. The project will provide access to an agricultural zone.

Estimated Cost: \$500,000.

Railroad Equipment

Railroad projects have recently been de-emphasized by the GOB. However, there is still a requirement for certain types of capital assistance. AID might be interested in providing locomotives which could be leased to Zimbabwe-Rhodesia railways. This would provide training for Botswanan railway crews and would also provide insurance in case Rhodesia fails to continue to operate the railroads in Botswana.

The exact list of equipment to be provided should be determined in collaboration with the Botswana/Rhodesia Joint Working Committee. The preliminary cost estimate is based on the locomotive needs identified by Transmark, a consultant to the Joint Working Committee.

Project Components: 16 locomotives.

Estimated Cost: \$8,000,000.

III. Lesotho

Although transport has always been complicated by dependence on the RSA as the single transit route for imports and exports, the closure of the Transkei border has necessitated rerouting of domestic traffic to Maseru and Mafeteng. Negotiations with the RSA over transit traffic has been hindered by staff limitations. A major survey of the transport sector was begun in the fall of 1978 and is scheduled for completion in early 1980. Assistance offered in the intermediate and extended stages will need to be considered after review of this survey. Certain projects likely to conform with survey recommendations, however, can be identified for immediate consideration.

Technical Assistance and Training and Associated Capital Costs
for Road Maintenance

In view of substantial construction underway or projected for the near future, resulting in a system over twice the length of existing roads, it will be necessary to upgrade road maintenance capacity both qualitatively and quantitatively. Included should be a phased training program meshed with construction underway and associated vehicles and equipment.

Cost estimates are purely hypothetical at this point. Specific project elements, especially equipment requirements, should be determined according to the findings of the National Transport Study, scheduled for completion in January 1980.

Project Components: 7.5 person-years of technical assistance (three persons for two years plus short-term specialists)

Training
Equipment

Estimated Cost: \$2,500,000.

Technical Assistance and Training in Freight Haulage, Transport Regulation and Development

GOL freight haulage regulations essentially represent an extension of RSA policy and interest. Assistance is needed in appraisal of these regulations and renegotiation of terms with the RSA for transit traffic. The GOL has established parastatal organizations to handle passenger and freight transport. National transport needs cannot be handled by these organizations above, but recent attempts at regulation have seriously restricted private operators. Transport policy capability also needs upgrading.

The project would provide technical assistance for the development of:

- (1) Freight haulage regulations
- (2) Public and private road transport industry
- (3) Institutional capacity in transport planning and policy making

Project Components: 2.5 person years of services (one long-term advisor for two years and two short-term specialists for three months each).

Estimated Cost: \$250,000.

Technical Assistance and Associated Capital Costs for Containerization (Rail/Road Link and Road Transport)

In view of the restrictions placed on truck traffic by the RSA, containerization could greatly facilitate commodity flows. The project may have to be increased if existing warehouse facilities cannot handle containers because of increased volume. Once the road is upgraded, containers may be used for all shipping, alleviating the effects of closing the Transkei border.

Project Components: 12 person-months of specialized services, to include preliminary planning for equipment purchase and installation, supervision of initial operations, and training in equipment operation and maintenance.

Equipment purchase and operation (to include containers and handling equipment, 10 railway flatcars, and personnel costs).

Estimated Cost: \$650,000.

Technical and Capital Assistance for Airport Operation and Maintenance, Safety and Navigational Equipment

Safety and general operations at the airport need considerable upgrading and this cannot wait until a new facility is constructed. A diagnostic study is recommended for detailed project design and costing of the equipment component recommended for first phase of project. A training program should also be included.

Project Components: 2.5 person-years of services (1 long-term advisor for two years and two short-term instructors).

VDF navigational equipment and safety equipment.

Training equipment.

Estimated Cost: \$800,000.

V. Swaziland

Past achievements in road construction are being eroded by insufficient maintenance capability, and transport policy and planning need additional support. Sufficient donor interest exists for rail transport, but civil aviation needs additional assistance in order to ensure safe operation.

Technical Assistance and Training in Transport Management

Staff capability is weak and strained by manpower considerations both in terms of general policy development and such specific skills as statistics. This project and the Road Maintenance Project which follows it might be merged.

Project Components: Two long-term advisors (a transport planner and a statistician) for two years each.

Estimated Cost: \$400,000.

Technical Assistance and Training and Associated Capital Assistance for Road Maintenance

Deterioration in the condition of the existing road system since 1975 and projected additions to the system indicate an urgent need for support to road surface maintenance and vehicle/equipment maintenance. Assistance has been provided for a new CTO workshop at Mapsops but assistance is needed to upgrade five other workshops. The detailed project design should be coordinated with ODM technical assistance efforts in this area.

Project Components: Six person-years of technical assistance (three advisors for two years each, including a Highway Engineer, an Equipment Maintenance Expert, and a Master Mechanic).

Improvements to five regional workshops.

Estimated Cost: \$2,100,000.

Technical Assistance and Associated Capital Assistance in Airport Operations and Maintenance

Continued use of the present facility will require not only training but also additional equipment and improvements to the runway surface. Certain costs have been covered by the GOS and other costs must be carefully considered in view of a projected new airport. The GOS has prepared a project document including plans for expansion and upgrading of the present facility. However, the proposed program includes only assistance required for successful airport operation and maintenance.

Project Components: Fire and safety equipment and radio navigation equipment.

Runway and taxiway improvements

Training Program

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Estimated Cost: \$1,200,000.

Feasibility and Preliminary Design Study for an International Airport

Even after upgrading, the existing airport cannot handle projected demand and does not adequately support security interests. Relocation and construction of a new international airport is sought. A master plan for this project is needed. Feasibility of such an investment needs further examination, especially in view of the rather high cost estimate of over \$700 million.

Project Components: Feasibility study, preliminary design and master plan for airport development.

Estimated Cost: \$100,000.

IV. Malawi

Malawi has achieved impressive results in the development of transport and has tied expansion of the sector to programs for administrative, social, and economic integration. Although certain key road links remain constraints on specific development proposals underway or planned for the near future, donor support is adequate to meet present needs. The most pressing needs concern possible development of lake traffic and intermodal linkages.

Technical Assistance for Transport Policy Study

Although considerable progress has been made in upgrading the capability of transport policy staff, the threatened deterioration of the road system, the impact of a reopened border with Zimbabwe-Rhodesia, and inefficiencies in intermodal linkage requires prompt consideration. The proposed transport policy study would address the following issues:

- 1) Traffic regulation
- 2) Transit traffic allocation
- 3) Road/lake traffic linkages
- 4) Road/rail linkages
- 5) Resource requirements, including training, to implement proposed policy changes.

Project Components: One long-term advisor for two years and six months of specialist services.

Estimated Cost: \$250,000.

Rehabilitation of the Plateau-Monkey Bay Route (Project #12)

The importance of this project should be determined as a function of planned Lake Region development activities. The project would be vital to the development of Monkey Bay as a major tourist facility and/or lake port. It would also provide an improved link between the internal and lakeshore road systems.

Project Components: Feasibility and final design study for rehabilitation of approximately 60 miles of paved road.

Estimated Cost: \$500,000.

Feasibility Study of Lake Traffic Development

Although both passenger and freight traffic are present on Lake Malawi, the mode has not received as much attention as other modes. Development has so far been piecemeal and there is a serious need for an integrated development plan. Economic operation will require development of intermodal linkages, reduction in freight flow imbalances, and use of larger vessels than can be presently handled. The relationship of lake traffic to tourism and other lake projects needs to be considered. Development is presently controlled by several government agencies and the creation of a Labor Department Authority should be considered.

Project Components: A technical assistance team of three experts (a port engineer, a shipping specialist, and a transport economist) is proposed to carry out the study, with a provision for up to nine months of additional specialist services in the areas of port organization and management, maintenance of port facilities, and training. A training program for diesel mechanics, deck officers and marine engineers is envisaged. The project would include the design of training facilities and development of specifications for new port facilities and equipment. Malawi Railways would probably be the executing agency.

Estimated Cost: \$450,000.

Technical Assistance and Training in Manpower Development for Aviation

The GOM has various training programs underway but needs to expand or augment domestic training and fellowships. Certain needs are keyed to development of the new airport, but assistance can be provided which fits both present and proposed needs. This would include upgrading existing training in safety, further training of ground crews in airport operation and aircraft maintenance, and training of local flight crews.

Project Component: One Training Specialist for two years, plus short-term specialists for on-the-job training.

Fellowships for higher level training.

Estimated Cost: \$1,500,000.

V. Zambia

The economic situation in Zambia is extremely serious. The shortage of foreign currency has resulted in a shortage of equipment, spare parts, fuel, and lubricant. Although, in order to promote efficiency, the military now operates the CTS, the availability of equipment for road maintenance is still below 30 percent. The Department of Roads has only 50% of its projected staff, and the Spring rains of 1979 left 45% of the national road system impaired. The ability of the government to meet recurrent local costs has been a constraint on large scale assistance projects in several instances.

Technical and Capital Assistance, Emergency Supplement to Road Maintenance

This project is intended to supplement the IBRD Third Highway Project (Road Maintenance) and is keyed to repairing recent deterioration of road surfaces. Road construction in Zambia has been well executed and it is the opinion of the IBRD that much of the system can be saved by resealing or resurfacing of previously constructed roads. The IBRD loan has yet to be executed because of problems over local funds and may have to be renegotiated.

This project is divided into two phases. The first phase involves identification of needs to be examined for rehabilitation and an appraisal of what can be done to salvage these roads. This is a serious need not covered by the IBRD project but which would facilitate start-up of the road rehabilitation program. The second

phase includes technical assistance and training in vehicle and equipment maintenance and repair, provision of equipment, spare parts and POL needed to carry out a portion of the proposed program.

Project Components: 18 months of technical assistance services for Phase I.

Three person-years of technical assistance and training for Phase II.

Equipment, parts and POL.

Estimated Cost: \$7,950,000.

Technical Assistance and Associated Capital Assistance for Road Transport Development

The National Transport Corporation needs support in order to ensure continued trucking operations. This involves capital assistance for the Group Inspectorate of all subsidiaries, capital assistance for Freight Holdings Limited, and training associated with the equipment.

Project Components: Vehicles, spare parts, tools, and radio equipment for the Group Inspectorate.

Workshop equipment, spare parts, and tools for Freight Holdings Limited.

Technical assistance to the NTC (one advisor for two years).

Training program (short-term specialists and training materials).

Estimated Cost: \$3,500,000.

Technical Assistance and Training for Road Transport Management and Development

This project is intended to support and upgrade transport planning capabilities for overall road development.

Project Components: Four person-years of technical assistance (one highway engineer and one transport planner for two years each), to include counterpart training.

Construction of two houses.

Estimated Cost: \$500,000.

Engineering Design for Zambia-Angola Road (Kaoma-Zambezi-Chevuma)

This road would provide a road link into Angola to mesh with a road link being upgraded there which would provide access to the Benguela railroad. Construction may require assurances that the GOA could maintain security along the corridor to the rail line.

Project Components: The project includes preliminary design, feasibility study and final design for approximately 120 miles of new road construction to paved secondary road standards. Logistic support will be a major problem for the design team as well as for the construction contractor.

Estimated Cost: \$7,000,000.

Engineering Design for Chembe Bridge

This bridge would provide a link between the northern agricultural product zone where there are several rural development projects -- and the Copper Belt consumer zone. At present there is only a very indirect road link which has seriously deteriorated at key points. There would also need to be upgrading of road links approaching the bridge to handle increased traffic links.

Project Components: The project includes the bridge design and an appraisal of associated road rehabilitation or upgrading requirements.

Estimated Cost: \$500,000.

Technical and Capital Assistance for Railway Rehabilitation Maintenance and Upgrading

This project is designed to rehabilitate the railway system and to provide a permanent maintenance capability. It also includes reconstruction of the Kafue railway bridge and a study for future rail electrification. The IBRD has committed full foreign cost funding of over \$100 million for this project. It is now expected that the project will begin in January 1980. Therefore, it is not included in the proposed SADAP program.

Technical and Capital Assistance in Civil Aviation

This project would provide fellowships, training and equipment to upgrade ground operations. There is a serious need for this project just to keep the airport operational, especially with end of support for ZASTI.

Project Components: Safety and fire equipment, communications equipment.

Fellowships in airport operation and management.

Technical assistance and training in aircraft and equipment maintenance.

Estimated Cost: \$1,600,000.

Program Summary

The preliminary cost estimates given above indicate that the immediate unmet needs in the transport sector of these five countries in Southern Africa correspond to an investment of approximately 43 million dollars over the next two years. Slightly over half of this amount represents a need for capital assistance. (This amount could be greatly increased when the road rehabilitation assistance requirements in Zambia are identified in the IBRD Third Highway Project.) The remainder represents a need for technical assistance, feasibility studies for future capital projects, and training.

Well over half of the total program is destined for Zambia, even though Zambia's major needs in the railway sector will be met through a presently programmed World Bank project. Investment needs in Botswana account for about \$10 million or about one-quarter of the total. The BLS countries together require assistance amounting to about 18 million dollars. Malawi is the most favorably placed at the present time with respect to transport investment; its requirements amount to less than \$3 million, all in technical rather than capital assistance.

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TABLE 1
SADAP TRANSPORT SECTOR PROJECTS
AND PRELIMINARY COST ESTIMATES

	Cost Estimates (000)		
	<u>Technical</u>	<u>Capital</u>	<u>Total</u>
Regional Airline (Feasibility Study)	200		200
<u>Botswana</u>			
Manpower Study	50		50
Road Maintenance ¹	(1,000)	(5,000)	(6,000)
Management Study	450		450
Kanye-Ghanzi Road	1,000		1,000
Ghanzi-Mamono Road	500		500
Railroad Equipment		8,000	8,000
TOTAL BOTSWANA	<u>2,000</u>	<u>8,000</u>	<u>10,000</u>
<u>Lesotho</u>			
Road Maintenance	1,000	1,500	2,500
Management Study	250		250
Road/Rail Link	150	500	650
Airport O & M	300	500	800
TOTAL LESOTHO	<u>1,700</u>	<u>2,500</u>	<u>4,200</u>
<u>Swaziland</u>			
Management Study	400		400
Road Maintenance	1,100	1,000	2,100
Airport O & M	300	900	1,200
TOTAL SWAZILAND	<u>1,900</u>	<u>1,900</u>	<u>3,800</u>
<u>Malawi</u>			
Transport Policy Study	250		250
Plateau-Monkey Bay Road	500		500
Lake Traffic Study	450		450
Airport O & M	1,500		1,500
TOTAL MALAWI	<u>2,700</u>		<u>2,700</u>

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Cost Estimates (000)

	<u>Technical</u>	<u>Capital</u>	<u>Total</u>
<u>Zambia</u>			
Road Renabilitation ²	450	7,500	7,950
Support to Trucking Industry	300	3,200	3,500
Transport Planning Assistance	500		500
Zambia-Angola Road	7,000		7,000
Chembe Bridge	500		500
Airport O & M	1,600		1,600
TOTAL ZAMBIA	<u>12,600</u>	<u>16,700</u>	<u>29,300</u>
TOTAL SADAP TRANSPORT PROGRAM	<u>19,700</u>	<u>23,300</u>	<u>43,000</u>

NOTES:

1. Presently programmed funds not included in proposed program total.
2. Preliminary estimate of possible AID participation. Equipment needs may actually be much greater than the amount indicated under capital assistance.

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