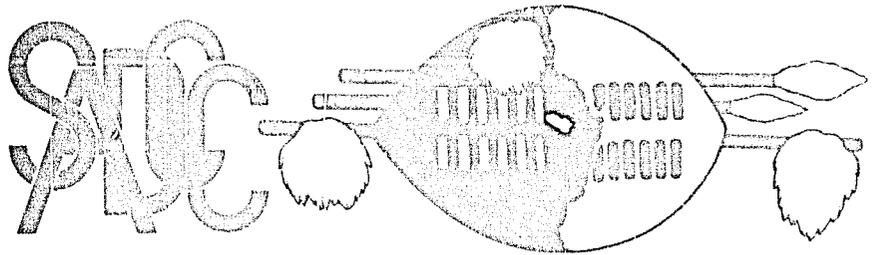


FOOD AND AGRICULTURE

SOUTHERN AFRICAN
DEVELOPMENT COORDINATION
CONFERENCE



Mbabane , Kingdom of Swaziland
31st January — 1st February 1985

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INTRODUCTION

SADCC Ministers of Agriculture met in Maseru, Kingdom of Lesotho, on September 7, 1984 to review progress in SADCC cooperation in the various sectors of agriculture and to approve future work. The Ministers also reviewed the comments made by SADCC international cooperating partners at the last annual conference which was held in Lusaka, Republic of Zambia, in February 1984, as well as the paper prepared by the Food and Agriculture Organisation of the United Nations entitled SADCC Agriculture Toward 2000. The Ministers comments can be found on page 13 of this report.

The task of coordinating specific sectors in the SADCC Programme of Action has been devolved to individual Member States. In Agriculture the responsibilities are as follows:

Food Security - Zimbabwe
Animal Disease Control - Botswana
Agricultural Research - Botswana
Soil and Water Conservation and Land Utilisation - Lesotho
Fisheries and Wildlife - Malawi
Forestry - Malawi

Where possible this report does not repeat project documentation which has been circulated to previous Conferences. A number of priority projects which have been presented to previous Conferences do, however, still require support. Participants wishing to obtain copies of specific project documents not contained in this report should contact the Coordinating State or the SADCC Secretariat. If the project is located in a particular Member State a direct approach should be made to that Government.

AGRICULTURE IN THE SADCC REGION

1. BACKGROUND

- 1.1. SADCC was established in 1980 with two broad but inter-related aims. The first was to promote regional development through the coordinated mobilisation of domestic and regional resources for the benefit of the peoples of the region. The second was to reduce member states' economic dependence particularly, but not only, on South Africa. SADCC's founding declaration, Southern Africa: Toward Economic Liberation, addresses itself specifically to the problems of agricultural development:

'A majority of the people of Southern Africa are dependent on farming and animal husbandry. Their future livelihood is threatened by environmental degradation and in particular by desert encroachment as well as recurrent drought cycles. Even today few of the States of the region are self-sufficient in staple foods. Both environmental protection and food security are major challenges nationally and regionally.'

In order to translate these objectives into concrete programmes of cooperation specific sectoral areas have been identified and member states charged with responsibility for their coordination: Food Security is coordinated by Zimbabwe; Animal Disease Control and Agricultural Research by Botswana; Fisheries, Wildlife and Forestry by Malawi; and Soil and Water Conservation and Land Utilisation by Lesotho. Overall coordination is maintained through regular meetings of Ministers of Agriculture and through the SADCC Council of Ministers which receive reports from all the sectors.

- 1.2. SADCC's 1984 Annual Conference, which took place in Lusaka, Zambia, in February of that year, focused on the problems of food and agriculture and, in particular, on the effects of the drought. At that meeting SADCC initiated a dialogue with its international co-operating partners on the policy and institutional issues which affect the achievement of SADCC's objectives in this field of cooperation. A number of helpful and constructive comments were made by the donor community. All these statements have been reviewed by SADCC Agriculture Ministers at their meeting in Maseru in September 1984. Subsequent to the Lusaka Conference the Food and Agriculture Organisation of the United Nations made an additional important contribution to this debate in the form of a study entitled: SADCC Agriculture: Toward 2000. This paper has also been given careful consideration by SADCC Governments and at the Maseru meeting of SADCC Agriculture Ministers.*
- 1.3. Obviously the problems of agricultural and rural development are, fundamentally, national. SADCC, however, seeks to identify those areas where significant benefits can be achieved from regional cooperation; to mobilise support for member states in their efforts to raise agricultural productivity; and to provide a forum for the exchange of knowledge and experience within the region. In addition, through the Annual Conference, SADCC seeks to broaden the dialogue with its international cooperating partners. The following paper does not represent a definitive statement of SADCC policy but is rather a further contribution to an ongoing debate about the deep seated problems of agricultural development in Southern Africa and

* See Addendum page 13

and other commodities is small. Consequently, both for trade routes and for the relief of food deficits SADCC member states remain heavily dependent on other countries. /of

- 2.2. Agriculture constitutes the base of the economies of SADCC countries and provides directly the livelihood for 60% of the region's population. Employment in industries related to agriculture is substantial. In Angola, Botswana and Zambia, mineral production is dominating the balance of payments but in other countries, agricultural exports are the prime source of export earnings. However, in all countries, agricultural exports are of major significance, although by international standards, SADCC countries are relatively small producers of export crops. Thus unless SADCC countries are able to compete internationally in terms of other criteria such as quality or time of delivery, they will remain price-takers on the world market. Given the increasingly protectionist attitudes of the major powers, particularly with respect to both raw and processed agricultural commodities, world markets will remain depressed and unstable. Foreign exchange earnings of SADCC countries from undifferentiated agricultural exports will thus fluctuate sharply from year to year with a consequent destabilising effect on national economies.
- 2.3. This bleak situation is compounded by a consistent and long-term regional decline in both food and export crops. Food production lags well behind population growth rates, leaving SADCC countries progressively less able to feed themselves and relying on food imports for their food self-sufficiency. As agricultural exports have also declined, these food imports have increasingly come as food aid, thus rendering SADCC countries highly dependent upon external donors.
- 2.4. The population of the SADCC countries will exceed 100 million by the year 2000, up from the present 60 million. If the present agricultural situation within SADCC persists, the future livelihood of our people is literally hopeless unless there is a major reversal of present trends, which in turn can only be achieved if linked to a massive increase in international support. While colonial policies, current global economic and trading patterns, and the difficult agricultural environment of the SADCC region are all significant factors behind the region's agricultural decline, SADCC recognises that serious mistakes have been made in the past by member states. The urban development bias is not only well documented but is also visibly apparent in the relative growth of urban centres throughout the region. Agriculture has often been neglected and agricultural policies have usually failed to embrace the long-term nature of agricultural production decisions and of appropriate agricultural technology generation and adoption. Compounded by the influence of poor and difficult soils, unreliable weather conditions and the expansion of populations into increasingly marginal agricultural zones, it is apparent that agricultural production within SADCC will remain highly vulnerable.
- 2.5. The problems identified above are fully recognised by SADCC and by its member states and programmes are being developed aimed at meeting this challenge. Within the region it is already evident that there have, in recent years, been major shifts of policy with the objective of increasing agricultural production and supporting rural development. These changes have come about mainly as a result of the experience of member states and the major policy reviews which they have undertaken.

Many of the comments which have been made by SADCC's international cooperating partners are true but they are not new to SADCC Governments. Furthermore the prescriptions suggested are often ones which have already been decided, and in some cases acted upon, by member states. Our problem is not one of general analysis but relates to the design and implementation of specific programmes and the mobilisation of sufficient resources to effect changes in agricultural production.

- 2.6. The implementation of new agricultural policies has been severely constrained by the drought both because it has absorbed massive national resources and because it has forced essential manpower into programmes aimed at meeting immediate needs rather than developing long term programmes.
- 2.7. SADCC is, however, developing a coherent and positive approach to the agriculture problems of the region as can be seen from the following sections of this report.

3. POLICY ISSUES IN FOOD AND AGRICULTURE

- 3.1. For SADCC Food and Agriculture are defined as having three main objectives:
 - to satisfy the basic need for food of the whole population of the region and progressively to improve food supplies to the people irrespective of the specific economic situation of each person or their position in society.
 - to achieve national self-sufficiency in food supply in order to free the region from the constraints which the present situation of dependence imposes on its development.
 - to eliminate the periodic food crises which affect areas or countries in the region and which, besides having catastrophic social consequences, reinforce dependence and under-development.(1)

The Need for a Comprehensive Approach

- 3.2. Since 1970 there has been increasing recognition that domestic policies, including price, monetary and fiscal, foreign exchange, credit and marketing policies, have contributed to the food insecurity of many developing countries, particularly in Africa, by discouraging domestic agricultural production, creating barriers to effective food distribution and storage systems, and limiting income growth of the poor particularly in rural areas. This has also given rise to a debate over the degree to which price policy reforms can increase food system efficiency without complementary investments in agricultural research, extension and institutional reform.
- 3.3. Since 1974, a substantial effort has been focused on international trade issues and macro-economic factors at the national level which affect food security such as price policy and exchange rates. However, the strategies thus developed often do not view the food system in its entirety, linking macro-policies and investment strategies with the critical micro factors such as farm level incentives, marketing system operational realities and institutional and administrative capacity. Often the implementation plans that result from the strategy

(1) Food and Agriculture, SADCC Maseru, January 1983. Page 3

studies lack realistic short to mid-term priorities and alternative policy, investment, and project plans. Although advances are being made, the state of knowledge is such that a comprehensive, systematic and interdisciplinary approach to the food system is still lacking and many important issues have not been addressed properly within this framework. Though still in its infancy SADCC's research sector is growing rapidly and is beginning to address such problems. It is envisaged that, over the next ten years, there will be a significant growth in the region's research capacity at both a national and a SADCC level. Major new investments of finance and of expertise are, however, needed if this momentum of development is to be maintained and accelerated. It is clear that investment in research is essential if SADCC is to succeed in achieving its objectives in the areas of Food and Agriculture.

Grain Reserves, Imports and Food Aid

- 3.4. Studies on grain reserves and imports has been an important focus of work by a number of international organisations. SADCC itself has now completed major, through preliminary studies on the establishment of a regional grain reserve and on food aid. Much of the current work has focused on the appropriate design of storage facilities, the management of stocks, the relative efficacy of using food reserves versus insurance approaches (such as the IMF's new compensatory financing facility) to ensure stable food supplies, and the possible roles of commercial imports and food aid in achieving food security. Such studies have provided valuable insights into several aspects of food security, including the high cost of trying to maintain food security solely through a system of international grain reserves. Yet the research has often implicitly assumed that most agricultural production passes through well-functioning markets and that governments hold a significant share of total grain stocks, assumptions that are particularly inappropriate for the poorest countries, especially those in Africa. Similarly, relatively little attention has been paid to private storage as an important part of national food systems, and the perverse policy and institutional incentives that are a barrier to effective storage and distribution from existing (or potential) reserves. SADCC is now about to embark on a detailed feasibility study for the creation of regional food reserve which will be based on national structures.
- 3.5. There is widespread agreement that food aid is likely to become increasingly important to SADCC countries during the coming decade, yet studies in the region have given relatively little attention to the effects and potential role of expanded quantities of food aid, and especially to the management and creative use of the resources generated by this food aid (both the local currency derived from food aid sales and the physical capital created through food-for-work projects). Given the food shortages and budgetary constraints facing SADCC countries in the coming decade the resources generated by food aid may be one of the few means available to finance needed improvements in domestic food systems to enhance food security. But without clear guidelines for using food aid and the funds it generates to, for instance, improve the marketing systems, the use of food aid may meet short-run needs at the expense of long-run national and regional agricultural development. Much more research is needed

on the policy processes and institutional constraints within SADCC countries before policy makers can know how much food aid they can use effectively. Detailed terms of reference are now being drawn-up for the more definitive study on food aid and it is hoped that this study will indicate how the region can improve on food aid procurement and ensure that food aid is used in a constructive way and not in a manner that undermines national agricultural production.

Domestic Food Production

- 3.6. Efforts to expand food production have often focused on the creation of improved infrastructure (e.g. input supply and distribution, including irrigation; grain warehouses; output assembly and distribution; slaughter and other processing facilities) and more recently, the reform of agricultural macro price policies. SADCC recognises, however, that the payoff in these efforts is critically dependent upon complementary institutional reforms. For example, the lack of appropriate institutions and of management skills have on occasions severely limited the actual benefits realised from sizeable investments in grain storage and live-stock slaughtering facilities, in new rural assembly and wholesale markets, and in fertiliser production and distribution plants. The needed complementary institutional arrangements include functional linkages of new infrastructure with adjoining production and marketing stages in the food chain.
- 3.7. Similarly, the payoff to reforms in price policy often depend on complementary institutional reforms and on the coordination of price policy with agricultural research and extension. How a change in price policy affects farmers' production decisions depends on how the private and public marketing systems works, the nature of the farmers' technology, their access to additional production resources, and their alternative income-earning possibilities. In order to plan effective price policy, knowledge of these relationships is essential, yet much of the discussion of price policy remains at a macro level and has paid insufficient attention to these micro relationships. One area to be explored by the SADCC Agricultural Research sector is how to capitalise on farmers' production knowledge of drought resistant crops such as sorghum and millet through coordination of price policy, adaptive research and marketing systems improvements to complement production of other less drought resistant food crops such as maize. A major sorghum and millet research programme is already under way. Another area of importance is to review comparative experience in countries where price policies have achieved increases in food production to determine what other technological input supply and extension systems improvements where necessary and effective. SADCC experts met in Harare in July 1984 to discuss the impact of such pricing policies on agricultural production. The results of these deliberations will contribute to future policy reviews.

Food Consumption Issues

- 3.8. Factors affecting levels of food consumption in the region both in the aggregate and by nutritionally vulnerable groups, have received considerable attention. Analyses have ranged from investigation of the nutritional consequences of agricultural development projects to inquiries into the consequences of, and alternatives to, generalised food subsidies. Food aid, targeted food subsidies and supplements, retail price policy, and how food policies affect the income earning opportunities of the poor have also been addressed. Food prices play

a dual role in the economy, serving as incentives to food producers and as major determinants of the real income of the poor.

- 3.9. Therefore, 'reforming' food policies by simply raising food prices in order to promote agricultural production may severely affect the nutritional well-being of the poor. Many countries, however, are facing increasing pressures from the IMF and other international organisations to raise farm prices and reduce food subsidies in order to promote more efficient long-term growth. Yet the ability of SADCC member states to undertake such reform is often limited. The privation such price increases would inflict upon the poor are a genuine concern as are the political consequences of such action (witness the recent food riots in Tunisia, Brazil and the Dominican Republic). Furthermore, in many countries in the region, the Government is a major employer and hence, higher food prices which usually lead to higher urban wages, imply a burgeoning government deficit.
- 3.10. One way of addressing the problem which has been proposed is through reducing marketing margins for food. Marketing margins in the region are high. In many instances, these margins reflect high costs of assembly, transportation, storage, transformation, and risk rather than the extraction of monopoly gains. The typical solution to these high margins in the past has been the imposition of price and margin controls and the creation of parastatals to handle the marketing functions. These solutions have, in fact, brought in their train, new problems. Alternatives need to be examined to help SADCC countries to capitalise on one of their few opportunities to increase farmers' incentives to produce food without adversely affecting consumers, particularly the already malnourished. Institutional arrangements such as voluntary wholesale/retail chains, cooperative wholesale/retail chains and the role of government in stimulating these institutions are subjects which need to be carefully examined.

Human Resources

- 3.11. The creation of a dynamic and successful agricultural sector in the region depends on the development of coherent and well integrated national food strategies. Designing a food strategy involves spelling out food system goals, designing policies and programmes consistent with the country's resource constraints and trying to co-ordinate the actions of various ministries and interest groups to help achieve these goals. It is essential, if these tasks are to be completed successfully, for SADCC researchers and Government officials to be trained and to become intimately involved in the generation and analysis of data on food systems and in the planning of such activities. Similarly, the retention of trained manpower within the region's agricultural sector, as well as the redirection of this manpower to areas of priority, is crucial. It is anticipated that a major study of the problem of retaining such personnel will be undertaken by SADCC shortly.

SADCC relative development programmes can only successfully take root when they are implemented by people with a long term commitment to agricultural development in the region and specifically in the particular country in which they are working. The region suffers badly from the loss of continuity in projects and programmes and from the large expense incurred with the use of expatriate technical personnel. Every effort must be made to use to the full the trained

human resources which the regional has and to rapidly increase relevant regionally based training programmes.

4. CONSTRAINTS IN THE SADCC AGRICULTURAL SECTOR

- 4.1. We now turn to the major constraints underlying agricultural production in SADCC. The region is reasonably well endowed with arable soils, grasslands and water. There is, however, considerable variation both within and between countries. Agriculture, by its nature, is location specific. Regional and continental analyses tend to overlook details that are critical to the development of appropriate national policies. Nevertheless it is possible to isolate key constraint areas in SADCC agriculture. As can be seen from the sectoral presentation which follows this report SADCC is seeking to develop programmes aimed at overcoming these constraints. This requires, however, a long term commitment both from SADCC and its international partners.

Crop Production

4.2. (a) Technical Constraints

These constraints include poor soils in much of the region, unreliable weather conditions, low fertiliser use, crop losses from pests and diseases, lack of improved seeds and labour shortages at critical crop periods. To a considerable extent, these constraints derive directly from under-investment in agricultural research and extension. To some extent also they are related to research and extension systems which have failed to address adequately their client groups. The heavy reliance on short-term technical assistance for research and training combined with the low effective status of agricultural research, training and extension services in the region have combined to create and ever-expanding technology gap.

The critical issues with these technical constraints are:

- (i) Technical improvement packages are location specific. Agricultural technology does not easily transfer between environments. While germplasm, herbicides and fertiliser technology may be introduced from external sources, strong national programmes are needed to adapt such technology to local conditions. Agricultural research in technology development requires long-term, consistent programmes of research and extension. High staff turnover, erratic and inadequate budgeting and lack of essential support staff and equipment all seriously reduce the effectiveness of research and extension investment in the region.
- (ii) Research and extension investment is of considerable value to SADCC nations. Countries cannot afford to lose highly trained agricultural scientists or to have them marking time for lack of resources. While there is a shortage of suitable skills within certain SADCC countries, the region, as a whole, is surprisingly well endowed with able, highly motivated agricultural scientists. There is an urgent need to retain these scientists in national programmes and to develop them as a regional resource to assist in technology development in other SADCC countries.

(b) Structural Constraints

These include manpower shortages in critical areas (particularly irrigation technology), inadequate and inappropriate training facilities, poor delivery systems for agricultural inputs and services, and high-cost and inefficient output marketing systems. Despite the importance attached by SADCC countries to irrigation development, most irrigation schemes are designed, built and often run by short-term expatriate staff. There is little major wholly indigenous irrigation development within the region.

The evidence is clear that many of the institutions created to develop agriculture are costly, ineffective and fail to address the real problems of the rural poor. Yet, within SADCC itself, there is a considerable range of institutional forms of marketing agencies, credit institutions and other service organisations. There are successful examples of such institutions as well as failures within SADCC. Much could be learned for policy from detailed comparisons of such institutions by SADCC scientists.

- 4.3. The SADCC Food Security programme is addressing many of these constraints. Concrete programmes of actions are being developed in the following fields:

- development of a regional and national early warning system to identify impending food shortages;
- a regional data bank to allow for storage and quick retrieval of basic information;
- an inventory of agrarian and agricultural resources;
- a regional food reserve system based on enhancing national reserves and interaction among them;
- storage loss reduction based on identification and application of better techniques;
- improvement of the region's marketing infrastructure.

Livestock Production:

- 4.4. The livestock industry is of major and growing importance to a number of the region's economies and is a means of livelihood and employment for a significant section of the region's population. In fact several farming households in the region consider cattle in particular as an excellent investment. However, the viability and the development of this industry depends to a great extent, on the ability of member states to protect the region's herds from disease and on better range resource management.
- 4.5. Many of the preceding comments on crop production apply equally to livestock. The livestock subsector is further constrained by the emphasis in research, extension and marketing services on cattle. Small ruminants, pigs and poultry production are significantly less well supported even though they are well distributed in the rural areas. Range productivity is low and overgrazing not only causes major land degradation but also complicates efforts at irrigation and water management through the siltation of surface water reservoirs. In the long run to sustain range productivity, it will be necessary for the region to explore means and ways of diversifying into other equally or more economically attractive ventures. Regionally foot and mouth disease, trypanosomiasis and tick-borne diseases cause

substantial losses. However, the greatest single threat to the region's livestock comes from rinderpest.

- 4.6. There is an urgent need, given the aforementioned constraints to develop appropriate technologies and marketing systems for the indigenous livestock industry. In this regard the following programmes for the development of livestock have been designed:

- Foot and Mouth Disease control and Vaccine Production;
- Control and Eradication of Rinderpest;
- Control and Eradication of Trypanosomiasis;
- East Coast Fever Control;
- Control of Ticks and other Tick borne Diseases; and
- African Swine Fever.

In addition to these programmes, SADCC is embarking upon a comprehensive short and long term training programme which would facilitate the provision of useful knowledge and management skills to develop, on a sustainable basis, the livestock industry. The education of farmers on disease control and livestock management will also constitute a major programme of action.

Fisheries and Wildlife Production

- 4.7. Wildlife and Fisheries represent an important underexploited resource within the region. The management and sustained cropping of such resources is in its infancy yet both low-income consumers and programmes to develop tourism could benefit from more effective cropping of wildlife and fisheries. Again there are instances of successful programmes throughout SADCC which could be extended in other parts of the region.

- 4.8. Programmes which have been identified, approved and for which support is being sought include:

- a regional survey on the potential for fish production, processing and marketing;
- a survey of the fishery materials and equipment manufacturing industry in the region and how it can be strengthened;
- the identification of training facilities in the region for both marine and fresh water fisheries and how they might be improved.

In addition there are specific projects dealing with, for instance, the development of fishing on lakes Kariba and Malawi/Nyasa as well as in Botswana.

Forestry Products

- 4.9. Forests are vital for the economy and the well-being of the people of the region. Besides being an economic resource for timber and pulp forests provide fuelwood to about 80% of SADCC citizens and play a vital role in the hydrology of the region.
- 4.10. Forestry development is often even more long-term than other agricultural development activities. While forestry as an industry can be expected to expand about 50% over the next two decades, the environment of the SADCC region is not suited to large-scale forestry development. Nevertheless, in localised areas, forestry plays an important economic role and these areas have to be expanded without

further delay. Forestry as a sector is severely constrained by lack of trained staff in all areas of forestry production and by insufficient capital investment.

4.11. To meet some of these problems SADCC is, at this Conference, for the first time presenting a set of projects in the Forestry Sector for which support is being sought. These projects include:

- the establishment of a Herbarium and a regional Forestry Industries' Training Centre;
- an inventory of forest resources; and
- a regional seed centre.

Projects are also being presented in relation to the problems of fuelwood in the region.

Soil and Water Conservation and Land Utilisation

- 4.12. Consistent with the desire to promote the achievement of Food Security, and having recognised that the success of this objective is largely dependent upon the protection and proper utilisation of the soil and water resources, the SADCC member states undertook to give special attention to this area. In this regard, a coordination programme was jointly agreed with the aim of obviating the conservation and utilisation problems as experienced in the region.
- 4.13. The most important physical problem affecting the region is erosion, which results mainly from overstocking and poor tilling practices. The problems of deforestation, bush fire and river-bed mismanagement also contribute to soil erosion. These problems are already serious and unless definite steps are taken to improve their situation even more serious damage will be done to the region's environment.
- 4.14. As a way of addressing these land degradation problems, the coordination programme intends to improve the capability of each member state to protect and better utilise land and water resources. In this regard, manpower development, as well as the exchange of information within the region, must form an important part of the programme. Member states wish to see more resources invested in the areas of Soil and Water Conservation and Land Utilisation and, therefore, urge SADCC's international cooperating partners to assist in mobilising additional resources for such programmes. In this way, direct conservation activities can be started, which in some areas in the region is already an urgent requirement. Similarly, as it is realised that the ultimate success of the conservation and utilisation of the programme rests with the practices of those that use the resource, people's participation is important in these programmes. The programme therefore aims to educate the users of soil and water resources - the farm - in proper land use methods and conservation practices through their direct involvement in such programmes.

5. CONCLUSIONS

The agricultural sector in SADCC is not in a healthy state in spite of the importance of agricultural industries to all SADCC economies. While some of the problems of SADCC Agriculture are externally caused, SADCC recognised that there is much that can be done by the SADCC nations themselves to improve the productivity of the sector. SADCC is seeking to establish a set of coordinated programmes linking the macro with micro policy issues, such as the development of appropriate technological packages for local areas. Such a programme is essential to the rehabilitation of the sector. SADCC acknowledges that these programmes need to be set in a long-term perspective with a stable and energetic staff. This can only be done if massive additional resources are put into research, training and extension programmes in each of the member states. To achieve this SADCC requires substantial support from its international cooperating partners.

RESPONSE BY SADCC AGRICULTURE MINISTERS
TO
SADCC AGRICULTURE: TOWARD 2000, PREPARED BY THE FOOD AND AGRICULTURE
ORGANISATION OF THE UNITED NATIONS (FAO),
AND
POLICIES IN AGRICULTURAL AND RURAL DEVELOPMENT, PREPARED BY
THE NORDIC COUNTRIES, AND OTHER STATEMENTS MADE BY
REPRESENTATIVES OF THE INTERNATIONAL COMMUNITY AT THE
SADCC LUSAKA CONFERENCE IN FEBRUARY 1984

The SADCC Ministers of Agriculture at their meeting in Maseru, Kingdom of Lesotho, on 7th September, 1984 noted with appreciation the statements made by the donor community at the Lusaka Conference and the follow-up document, SADCC Agriculture: Toward 2000 prepared by the FAO. The Ministers considered these contributions as valuable and timely, particularly since they are in harmony with the Lusaka Declaration, Southern Africa : Toward Economic Liberation, and the pronouncements made by SADCC leaders at their subsequent meetings.

While the SADCC Agricultural Ministers recognised the need to address all the policy issues raised in the documents mentioned above, they agreed to make their observations on the following crucial areas:

- As regards the need to put more emphasis on the assistance given to small farmers in order to create conditions in which they can increase their productivity, the ministers concurred with the views presented in the various documents. The view was taken that such moves should not give the impression that large scale farmers were being excluded. In this sense, it was the feeling of the Ministers that it was necessary to promote policies that strike an appropriate balance between the small and large scale farmers. This should be noted and accepted as an existing practice in the region.
- As regards delivery systems and access to production inputs generally, the Ministers took the view that the statement that inadequacies in these areas tended to present themselves as obstacles to agricultural development was valid. Particular mention was made here of such areas as timely delivery of inputs, access to technology and research findings along with access to credit, particularly to small scale farmers, as well as the potential role of subsidies. An additional area of major importance is the training and development of manpower in order to increase the capacity of member countries to plan and implement development plans and projects. Secondly, the question of the retention of trained manpower as well as the redirection of this manpower to areas of priority in agricultural development deserves urgent consideration. Special mention was made here of, for example the loss of continuity in projects and programmes and the large expenses incurred with the use of expatriate technical assistance.
- As regards the question of pricing policy, the Ministers agreed that there was a need to improve the current pricing policies in the region so that they could promote greater food production. While it is a valid food security consideration that food prices should be such that they permit access to food to those that need it most, there is, equally, a need to ensure that the prices allow an economic return to those that produce the food. Having said this, the Ministers took the view that due to the differences in the socio-economic conditions pertaining in each of the Member States, it would be impossible to recommend a uniform

pricing policy for the whole region. They felt that it would be more useful to examine the pricing policies of the individual Member States. In this way, therefore, the value of the present recommendation could be greatly enhanced.

Furthermore, it needs to be recognised that it is not only the SADCC pricing policies that need improvement but also that the international pricing mechanisms may need to be changed since they may also have adverse effects on the domestic policies which in turn will affect the local farming community negatively.

- With regard to the comparative analysis reflecting in the FAO Report, the Ministers studied with keen interest the various scenarios proposed.
 - (i) The Trend Scenario is based on the past trends in agricultural production. This implies continuing population growth and declining agricultural production with a resultant increase in the food deficit.
 - (ii) The Improved Performance Scenario (IP) envisages a near doubling of production between the years 1980 and 2000 through increase in yield levels and from the expansion of arable land. The Scenario envisages a 3% growth in the G.D.P. and is flexible and gradualistic.
 - (iii) The High Performance Scenario (HP) assumes a high adoption rate of developed technology and calls for massive injections of capital and human resources.

Having considered the different alternatives the Ministers agreed that the Trend Scenario with its implications for the future was not acceptable.

- The Ministers were in agreement that there was an urgent need to change the present trend in agriculture production. The HP scenario would seem to be the most logical choice. It was the feeling of the Ministers however, that given its high cost in financial capital and human resources this scenario was unattainable by most Member States of the region especially when considering the adverse international economic climate. It was therefore agreed that the proposals made under the IP scenario were preferable. The gradualistic approach advocated by this scenario would seem to be within the capacity of the Member States to implement. The Ministers further recognised the fact that to give substance to the IP scenario, greater commitment and support should be given to the various SADCC programmes under food security, which tended to coincide to a large extent with the IP scenario recommendations.
- Overall the Ministers noted the position taken by the cooperating countries and agencies, that there is a need for policy adjustments covering various areas, and that such adjustment should be given effect as a matter of urgency. It was however underlined that the responsibility for policy adjustment lies with the individual Member States and, therefore, any recommendations made should take into consideration specific conditions in the individual Member States. This therefore is another area in which a close examination of conditions in member countries would be a useful undertaking.

The Ministers having considered the various papers, and having singled out specific areas for comment wished it to be recognised that many of the issues raised are already being implemented under one programme or another either nationally or under the umbrella of SADCC. They further wished to emphasize that the SADCC Member States have demonstrated the will and interest to ensure that they attain a level of self-sufficiency in food production. The Member States recognise that it is neither desirable nor feasible and definitely not in their interest to depend on food imports and food aid in perpetuity. Equally the Member States recognise that the role of the regional organisation, SADCC, is catalytic in nature, with the responsibility for development in the individual Member States remaining with the individual Member States.

The Ministers having recognised the contribution from the various cooperating countries and agencies, and in particular the elaboration from FAO, recommended that the Council of Ministers for SADCC Member States note and welcome the contributions as a significant indication of interest in the development of the region, the achievement of food self-sufficiency and particularly the reduction of dependence from, though not exclusively, the Republic of South Africa.

Maseru, Kingdom of Lesotho
September 7, 1984

FOOD SECURITY

I. INTRODUCTION

1.1. The SADCC food security projects fall into three main categories, namely, clearly identifiable regional projects; national projects with a regional impact, and drought related projects. The first category has been delegated to Zimbabwe to coordinate, whereas the last two categories are the responsibilities of the individual member states to implement. However, all the categories of the food security projects are summarized in this report in order to give a total picture of the SADCC food security programme.

1.2. Food Security

In the areas of Regional Food Security, 10 projects were identified, and presented to the Lusaka SADCC Conference in January/February 1984.

- Project 1 - A Technical Assistance Programme Designed to Achieve Coordination and Cooperation on all Agrarian Issues.
- Project 2 - An Early Warning System for Food Security
- Project 3 - A Regional Resources Information System
- Project 4 - A Regional Inventory of Agricultural Resource Base
- Project 5 - A Regional Food Reserve
- Project 6 - Regional Post-Harvest Food Loss Reduction
- Project 7 - Regional Food Processing Technology
- Project 8 - Regional Food Marketing Infrastructure
- Project 9 - Regional Food Aid
- Project 10 - Recruitment and retention of professional and technical staff in the ministries of Agriculture in the SADCC countries.

Significant progress, has been made in the past two years. This is an indication of the will and determination of the SADCC member states to achieve their defined goals and objectives.

1.3. Objectives of the SADCC food security programme

The SADCC food security programme seeks to achieve, inter alia, three fundamental objectives:

- (a) to meet the basic need for food of the population of the region through the improvement of food and livestock production and of food supplies to the people;

- (b) to provide a bouyant agrarian sector including both peasant and commercial sub-sectors;
- (c) to reduce present heavy drains on foreign exchange imposed by basic food imports; and
- (d) to reduce dependence on external sources as food suppliers.

In summary, the prime objective of SADCC's security food programme is to increase productivity and thereby improve the standard of living of the mass of the people who are dependent on agriculture for their existence.

These expressed objectives are clearly interrelated and are combined to represent a set of common problems, plans and aids which should be and are addressed to in developing a food security policy. They also represent an expression of the strategic objectives to which such a policy should be directed and show clearly the key role this policy plays in the economic development and liberation of the SADCC region.

1.4. SADCC economic strategy

An economic strategy aimed at achieving these objectives has been identified, though this strategy needs to be subjected to periodic revision or evaluation, and comprises a number of elements and means.

(a) Reinforcement of national and regional food production systems

The achievement of the food security objectives presupposes a solution of the problems of national food production system. It is clearly appreciated by all SADCC member states that the extent to which food production can be increased depends on the measures which each individual SADCC member state undertakes according to its own capacity and priorities.

Some work in this area has already been identified and is in some cases being implemented for example: some studies have been carried out to assess the potential productive resources of the SADCC region, and consistent with such studies, a number of CTC workshops, seminars and courses are being held with the aim of meaningfully exchanging ideas, knowledge and skills among the SADCC technical and professional experts.

(b) Improved systems for delivery, conservation, processing and food storage

The increase of national food availability and the reliability of food supply depends on the capacity and efficiency of the food marketing, processing, delivery and storage systems that can be established in the SADCC region. Without a balanced development between production and marketing of food, the strengthening of national productive capacity will have only a limited impact on achieving regional food security objectives.

The efficient and timely delivery of what is produced, the reduction of post-production food losses, the improvement of food handling, and the conservation of food processing technology are a prerequisite to the achievement of the SADCC food security policy objectives.

In view of this, a number of programmes and projects are already being undertaken.

(c) Establishment of systems for the prevention of food crisis

The establishment of a regional capability for the prevention and control of food emergencies is of paramount importance in order to ensure national security of supply, to minimize the tragic consequences associated with the destruction of crops and stocks caused by climatic and other factors and to guarantee the political and economic independence of SADCC.

SADCC member states appreciated that the development of this capacity involves five main elements: the implementation of an early warning system, first at national level and later at regional level; the prevention of plagues and diseases; the creation of security reserves at national and regional levels, the creation of seed stocks of the basic food crops and the establishment of regional mechanism for the coordination of external support in times of emergency.

In pursuing this major objective, a number of national projects with a regional impact have been identified and were presented at Maseru in January 1983, and again at Lusaka, Zambia in January/February 1984. They include the production of groundnuts and sorghum seeds, establishment of seed security stocks, reinforcement of the food marketing network, and an early warning system in Mozambique; interim regional grain reserves in Mbabane; improvement of food storage capacity in Lesotho and the construction of storage facilities in rural areas of Zambia. Additional projects are being presented for the Mbabane SADCC Conference in 1985.

(d) Current drought study

Resulting from the past three years of severe drought which seriously affected the agricultural sectors of most of the SADCC member states, a comprehensive drought report was compiled, and was presented to the Lusaka Annual/Pledging Conference in February 1984 with an appeal for assistance from the international community. A number of drought projects are to be re-presented at the Mbabane Conference.

(e) The establishment of a system to coordinate all the regional food security projects and their implementation

The Zimbabwe Ministry of Agriculture has a small Administrative Unit within its own organisation which works full time on the SADC regional food security programme.

The Unit services Project One. It coordinates all regional food security; organizes meetings of technical experts who examine feasibility project studies; organizes meetings of the Consultative Technical Committees (CTCs) on Agricultural Extension, Agricultural Research and Agricultural Economics; CTC seminars and workshops; negotiates with possible donors for funds needed to finance project studies and project implementation, and draws up progress reports on all SADC food security matters.

Although Zimbabwe is responsible for the administrative unit, the Australian Government is providing financial assistance of Z\$149,000 towards its operating costs and, in addition, will provide a specialist to strengthen its expertise. This man is expected to assume his duties in Harare in January 1985.

2. REGIONAL FOOD SECURITY PROJECTS

Zimbabwe coordinates the SADC regional food security programme consisting of ten regional projects which constitute the first step in constructing a comprehensive programme for attaining regional food security. This report gives the progress so far achieved.

- 2.1. Under project 1: A technical assistance programme designed to achieve cooperation and coordination on all agrarian issues, three meetings of each of the three consultative technical committees on agricultural research, agricultural extension, and agricultural economics have been held. These CTCs help Zimbabwe to appraise technically the SADC regional food security projects and programmes. Also eight technical experts meetings to consider the recommendations of the eight food security programme feasibility studies, and a number of workshops and seminars recommended by the CTCs have been convened. The project provides for the travels of the SADC delegates to the above meetings, workshops and seminars, and to establish a regional food security library in the Zimbabwe Ministry of Agriculture in Harare which is at the disposal not only of Zimbabwe but also of officials from the other SADC member states.

The project, which has been funded by USAID and Zimbabwe, for a sum of US\$890,000 since 1982 is coming to an end by 31st December 1984. However, because of the critical importance of this project in the SADCC regional food security programme implementation, the SADCC Agriculture Ministers meeting in Maseru on 7th September 1984 approved the extension of this project for another four years, and this calls for donor funds of US\$1,35 million in order to undertake four meetings of each of CTCs; twelve workshops and seminars; more technical project reviews; more consultancy work to identify and define production-oriented projects; buy more books for the food security library, and enabling travels of the SADCC delegates to participate in the promotion of food security programme and projects.

- 2.2. Project 2: Early warning system for regional food security, which intends to develop a regional and national early warning system to provide advance information on basic food crop production and food supplies in the region, and to identify impending food shortages in adequate time to enable the SADCC member states individually and collectively to take appropriate preventive actions, is nearing actual implementation in that a small regional technical team of experts is being established to develop such a functional system. For the regional technical team to function effectively, nine national early warning teams, one in each country, are required. FAO has agreed to offer US\$250,000 for the preparatory assistance for the initial 12 months and DANIDA has expressed keen interest to consider to offer to SADCC US\$4,8 million. It is anticipated that implementation of the project will commence early in the new year.
- 2.3. Project 3: A regional resources information systems, which is meant to develop a regional data bank to allow systematic storage and quick retrieval of basic agricultural information, UNDP has agreed to offer US\$250,000 and the Netherlands has also agreed to offer US\$4,5 million. Zimbabwe is currently undertaken a recruitment campaign to select suitably qualified persons from the SADCC region in order to man a regional resources agricultural information system. Project implementation should commence early in the new year.
- 2.4. Project 4: Regional inventory of agricultural resource base
- Significant progress has been made in the establishment of a regional inventory of agricultural resources base in that a team of technical experts for the actual implementation is being formed, and so far a land use planner, an administrative officer and secretary have taken up their appointment. They are now settling down. An agro-ecologist (team leader) is likely to come from Ireland on a two year contract period, initially.

2.5. Project 5: Regional food reserve

A pre-feasibility study was completed for the regional food reserve, and the SADCC Agriculture Ministers approved in Maseru on 7th September 1984 the recommendation that a definite study be carried out so that concrete policy decisions can be made on the strategic locations size and quantities of food stocks, and establishment of regional and national food reserves.

A sum of US\$220,000 will be required to undertake the study. However, EEC, which financed the pre-feasibility study, has expressed interest to finance the definite study.

2.6. Project 6: Regional post-harvest food loss reduction and

2.7. Project 7: Regional food processing technology

Significant progress has been made in that a team of technical experts has been established, comprising 1 marketing economist, 1 administrative officer, 1 secretary and 1 driver. A policy analyst for the team is being recruited.

The objectives of the two projects, which the team will try to achieve, are to (a) reduce post-harvest losses through the establishment of effective post-harvest systems for the main food sources of plant and animal origin in the SADCC region and (b) to identify problem areas and advise on the appropriate technologies and facilities for the preservation, processing, distribution and marketing of processed foods to meet the nutritional needs.

The lifespan of these two projects is a period of five years initially. The funds allocated amount to US\$1 927 952, funded by CIDA/IDRC.

2.8. Project 8: Regional food marketing infrastructure

A final report on the feasibility study of this project was completed in May 1983 and was submitted to the Council of Ministers in July 1983 at Maputo. The report was referred back to SATCC and SADCC Industry Unit for more information and comments. The comments and the report were again submitted to the SADCC Agriculture Ministers Meeting in Maseru, Lesotho, on 7 September 1984 for their approval. The Agriculture Ministers, however, directed that a SADCC technical experts meeting be convened early in 1985 to review the final report and to determine which parts of it were acceptable. The revised report should be sent by Zimbabwe to the consultants with a request that they provide any additional data or analysis required. The report will then be re-submitted for approval.

2.9. Project 9: Regional food aid

The status of this project is the same as the status of project 5 already described above.

2.10. Project 10: Recruitment and retention of professional and technical staff of Agriculture Ministries in the SADCC region

CIDA has agreed to provide a grant of US\$245,498 and a study director who will be assisted by a team of local firm of consultants to undertake a proper study. The study is likely to start in November/December 1984.

The status of funding for the regional projects is shown below:

2.11. New regional projects under consideration

There are also two more SADCC regional food security projects, namely, seed supply and irrigation management that are still under consideration. These will be submitted for approval by the Council of Ministers after their terms of reference and costing have been carefully ascertained. They were, however, noted by the SADCC Agriculture Ministers Meeting in Maseru in September 1984.

SECTOR: Food Security

Project No.	Project Title	Total Cost US\$ million	Foreign Cost	Funding Secured US\$ million	Funding Under Negotiation	Comments: Donor interest/Under negotiation/Funding secured Project completed/Under implementation/Studied
1	A Technical Assistance Designed to Achieve Coordination and Coopera- tion on All Agrarian Issues	2,389	2,174	0,675 0,149		USAID grant Australia grant and TA Under implementation
				0,215	1,35	Zimbabwe government contribution Under negotiation with USAID to extend this project for another four years.
2	An Early Warning System for Regional Food Security (Study/Implementation)	6,763	6,763	0,130 0,250		Study completed, funded by FAO grant and TA Pre-implementation funded by UNDP/FAO grant and TA
					4,8	Interest from DANIDA for implementation
3	A Regional Resources Information System (Study/Implementation)	4,950	4,950	0,200 0,250		Study completed, funded by CFFP grant Pre-implementation funded by UNDP/FAO grant & TA
					4,5	Netherlands grant and TA for implementation
4	A Regional Inventory of Agricultural Resource Base (Study/Implementation)	1,938	1,938	0,200		Study completed, funded by CFFP grant
				1,738		Ireland grant for implementation.
5	A Regional Food Reserve* (Study/Implementation)	0,220	0,220	0,220		Pre-feasibility Study completed funded by EEC
					0,220	Required for proper feasibility study
6	Regional Post-Harvest Food Loss Reduction (Study/Implementation)	2,077	2,077	0,150 1,927		Studies completed funded and carried out by IDRC Under implementation funded by Canada and IDRC grant.
7	Regional Food Processing Technology (Study/Implementation)					

Project No.	Project Title	Total Cost US\$ million	Foreign Cost	Funding Secured US\$ million	Funding Under Negotiation US\$ million	Comments: Donor interest/Under negotiation/funding secured Project completed/Under implementation/Studied
8	Regional Food Marketing Infrastructure (Study/Implementation)	0,150	0,150	0,150		Study completed funded by CFTC implementation not costed yet. Interest from ADE
9	Regional Food Aid* (Study/Implementation)	see 5 above.				see 5 above.
10	Study on Staff Recruitment and Retention in Ministries of Agriculture	0,245	0,245		0,245	Interest from CIDA and IDRC grant and TA (Study likely to start November 1984)

* Funded and carried out together.

3. NATIONAL FOOD SECURITY PROJECTS WITH A REGIONAL IMPACT

3.1. Old projects

The national food security projects with a regional impact appear to have had the least success in attracting funding. Hence their actual implementation has been slowed down. The majority of projects under this category were first presented at the Maseru Annual/Donor Conference in January 1983 and again at the Lusaka Conference in January/February 1984. They will be re-presented for funding at the Mbabane Conference in January/February 1985.

Since there is considerable complementarity between the national and regional programme, the slowness of national projects in attracting funding on time, may also slow the smooth take-off of the regional projects. Therefore, the international/donor community are urged to support this segment of the SADCC economic development programme much more sympathetically. The status of funding of these projects is as follows:

Project Title	Total Cost US\$ million	Foreign Cost	Funding US\$ million
Improvement of the Agricultural Water Supply in the Bengo Valley, ANGOLA	14,124	14,124	Presented at Lusaka; No progress reported
Reinforcement of the Department Soils and Climate of the Agro-economic Research Institute, ANGOLA	0,553	0,553	Interest from Italy
Creation of an Agricultural Experimental Station in Luanda, ANGOLA	2,361	2,361	Interest from FR Germany
Primary Millions of Maize and Cassava, ANGOLA	2,241	2,241	Interest from NORAD
Improvement of Food Storage Capacity, LESOTHO	8,958		Partially funded from Local Resources.
Production of Groundnut and Sorghum Seed, MOZAMBIQUE	8,650	5,0	1,9 France Loan Under negotiation with IFAD
Establishment of Seed Security Stocks, MOZAMBIQUE	3,430	2,5	Under negotiation with IFAD (with project 1.5.1.)
Reinforcement of Food Marketing Network, MOZAMBIQUE	5,452	3,552	Negotiations with Sweden for Nordic countries Negotiations with IFAD.
Reduction of Post-Production losses, MOZAMBIQUE			Project withdrawn for reformulation

Establishment of a Network of Quarantine Stations, MOZAMBIQUE	0,975	0,750	0,550 DANIDA grant
Storage Facilities, MOZAMBIQUE	19,330	13,130	3,056 Netherlands grant 6,440 FR Germany loan 3,634 Under negotiation with Japan and Denmark
Construction of Food Storage Facilities, ZAMBIA	4,021	4,021	4,021 Funded by CIDA, EEC and NOPAD
Interim Regional Grain Reserve, ZIMBABWE	8,750	8,750	8,750 NORAD grant
Rural Service Centres and Periodic Market Programme - Pilot Project, ZIMBABWE	1,950	1,950	Under Negotiations with Italy
Rural Public Works Programme Ecological Upgrading and Rural Income Underwriting, ZIMBABWE	50,0	50,0	Under Negotiations with Italy
Land Use Reform Programme (Communal Areas), ZIMBABWE	16,0	16,0	Under Negotiations with Canada/Italy
Communal Areas Management Programme, ZIMBABWE	1,243	1,243	Under Negotiations with Italy
Tractor Credit Fund, ZIMBABWE	10,5	10,5	Under Negotiations with Austria

The SADC Agriculture Ministers in Maseru in September 1984 noted that in certain cases the funding of these projects has come from resources earmarked originally for bilateral programmes. It was agreed that, when pledging funds to SADC, donors should not simply divert resources from national to regional programmes.

3.2. New national projects

Tanzania has prepared two new projects for funding at the Mbabane Conference in January/February 1985.

NEW PROJECT PROPOSAL

TITLE : KAPUNGA RICE PROJECT
SECTOR : AGRICULTURE
RECEIPIENT COUNTRY : TANZANIA
GOVERNMENT IMPLEMENTING AGENCY : NATIONAL FOOD AND AGRICULTURAL CORPORATION (NAFCO) AND USANGU PEASANT PRODUCTION IRRIGATION UNIT (UPPU).

ESTIMATED STARTING DATE : 1985/86
DURATION : 8 YEARS
IGNOR INPUTS : US \$12.9 MILLION (TSHS. 226.2 MILLION)
GOVERNMENT INPUTS : US \$ 5.5 MILLION (TSHS. 96.3 MILLION)

OBJECTIVES :

The development of a total of 5 700 ha of paddy is envisaged under this project. 3 700 ha will be under paddy during the normal crop season, and another 2 000 ha to be put under soyabeans during the cool season when the conditions are not ideal for paddy production.

JUSTIFICATION :

Currently our national demand for rice stands at about 150 000 tons while our current domestic supply is around 25 000 tons of rice and the deficit is partly taken care of by food aid in terms of grants, and/or loans.

At full production the project would generate an extra 11 200 tons of rice to our domestic supply thereby reducing the deficit, albeit slightly. There will still be the need to import some rice.

The project is also socio-economically important to the families which will be involved in paddy production in the area. A total of about 60 families will benefit from it by increasing their income.

BACKGROUND INFORMATION :

In recognition of the need for increased rice production in the country NAFCO was asked to open up another large scale rice farm under irrigation in the Usangu Plains. To that effect, a West German consulting firm, Agrar-Und-Hydrotechnik (AHT) was commissioned to carry out a feasibility study on the "Development Potential of the Usangu Plains of Tanzania" by the Commonwealth Fund for Technical Cooperation. Among several Terms of References was one to examine an optimum mix of a large scale farm (to be owned by NAFCO) and a small holder scheme. The firm was also asked to include a detailed comparative economic analysis of the two which were to be undertaken as a basis for complementary development. The final study report was submitted to NAFCO in February, 1979.

PROJECT LOCATION :

Karunga is situated about 20 km north of Chimala in Mbeya District, Mbeya Region. The project site is served by both the TALARA Railway (Chimala Station) and the TANZAM Highway. The areas have a highly unreliable erratic unimodal rainfall. However the rainfall (+ 600 mm) is statistically sufficient for one rainfall summer season crop a year. The project will draw the irrigation water from the Rusha and Chimala rivers.

PROJECT COMPONENTS

The proposed project has two components, viz; Smallholder Component and Large Scale Farming Component.

a) LARGE SCALE FARMING (LSF)

This is to constitute NAFCO's farm to be established as a district self-contained commercially oriented farming operation. The farm would have the capacity to put 2 700 ha under paddy during the normal crops season and 2 000 ha under soya during the cool season when conditions are not ideal for paddy production.

ORGANISATION:

The LSF component is to be managed as a NAFCO Subsidiary Company along the same lines as the nearby NAFCO Mbarali Rice Farm.

PLANNED WORK :

Work to be done under LSF component is as indicated in the table below. Surveys, Tender, Design and Construction will be undertaken during the first two years, in the case of paddy production, and actual production is to start in the 3rd year with an area of 700 ha. This will increase to 2 700 ha in the fourth year from where no more expansion of land takes place. In the case of soyabeans production will start in the 5th year.

YEAR:	1	2	3	4	5	6	7	8	TOTAL
PADDY :	Surveys, Tender, Designed and construction		700	2 000	-	-	-	-	2 700
Soyabeans	-	-	-	-	500	500	500	500	2 000
TOTAL AREA UNDER CROPS/YEAR (HA)			700	2 000	500	500	500	500	4 700

PROJECT COSTS :

The corresponding project costs for the action plan are as indicated in the table below. In case of paddy figures corresponding to years 1 to 4 are capital expenditure, where as from years 5 to 8, are recurrent expenditure figures. In the case of soyabeans production capital costs are to be incurred from year 5 to year 8.

EXPENDITURE ESTIMATES FOR BOTH PADDY AND SOYABEANS

COSTS		(IN MILLION US \$)							
YEAR	1	2	3	4	5	6	7	8	TOTAL
	1,7	1,7	1,7	1,7	0,375	0,375	0,375	0,375	8,50

Estimated outputs for both Paddy and Soyabeans are shown in the table below.

OUTPUT IN METRIC TONS

YEAR	1	2	3	4	5	6	7	8	9-20
RICE	-	-	-	1 190	5 508	6 562	7 616	8 670	10 540
SOYABEANS	-	-	-	-	893	1 943	3 168	1 558	5 268

The Economic Internal Rate of Return (EIRR) for this component (LSF) was calculated at 8.4%.

b) SMALLHOLDERS (SH) :

About 740 ha of existing smallholders rice farms are to be expanded to 1 100 ha net, and the present irrigation canals and structures are to be strengthened for efficient water use.

ORGANISATION :

The Smallholder Scheme, will be managed by the Usangu Peasant Production Irrigation Unit. It is further envisaged that NAFCO will provide certain services to the Smallholder Scheme such as milling paddy, advice on better water management. Among major works which NAFCO will share with smallholders include :

- a 23 km. all weather access road from TANZAM Highway to the project site.
- a 14 km. canal on the Ruaha river.

PROPOSED WORK

Smallholder component is to be implemented side by side with the Large Scale Farming (LSF). Thus the project period for Smallholder is the same as that for Large Scale Farming. The table below shows area to be put under paddy.

YEAR	0	1	2	3	4	5	6	7	8	TOTAL
Land to be 740 cultivated	-	-	60	60	60	50	50	40	40	1 100

PROJECT COSTS :

Smallholder component will cost US \$1.4 million (Tsha. 75.2 million) to be spend in 8 years of the project as indicated in the table below.

YEAR	1	2	3	4	5	6	7	8	TOTAL
COSTS (IN MILLION US \$)	0.6	0.7	0.7	0.7	0.4	0.4	0.35	0.35	4.4

Production estimates for the smallholder component throughout the project life is :-

OUTPUT IN METRIC TONS

YEAR	1	2	3	4	5	6	7	8	(9-20)
RICE		180	180	180	180	180	150	150	660

The Economic Internal Rate of Return was calculated at 9.5%.

NEW PROJECT PROPOSAL

TITLE : MADIBIRA RICE SCHEME
SECTOR : AGRICULTURE
RECIPIENT COUNTRY : TANZANIA
GOVERNMENT IMPLEMENTING AGENCY : NATIONAL AGRICULTURAL AND FOOD CORPORATION (NAFCC) AND SMALL HOLDERS.
ESTIMATED STARTING DATE : 1985/86
DURATION : 8 YEARS
DONOR INPUTS : US \$19.9 MILLION
GOVERNMENT INPUTS : US \$12.6 MILLION

OBJECTIVES : To develop by phases, of about 85,000 ha of land with a main season crop of paddy and an offseason crop of maize grown over 60% of the total area. Phase I would involve run-off river development of 3,600 ha for irrigated paddy. 2 000 ha will be under smallholders (SH) and the remaining 1 600 ha to be under large scale farming to be managed by NAFCC.

Phase II will involve the expansion of the irrigated area to about 8 500 ha by provision of reservoir on the Njombera River, 5 000 ha allocated to NAFCC and the remaining 3 500 ha be under smallholders.

JUSTIFICATION :

- (a) Self-sufficiency : At peak production in phase II, the scheme will produce about 42 500 tons of paddy (approximately 25 500 tons of rice), 10 200 tons of maize thus contributing significantly to the nation's goal of self-sufficiency in food production. The domestic demand for rice is 450 000 tons. Domestic supply is 25 000 tons. Therefore there is still a deficit of 400 000 tons.
- (b) Foreign Exchange Earnings : The annual foreign exchange savings at full development is estimated to be equivalent to Tshs. 17.0 million (US \$1.0 million).
- (c) Effect on Rural Income and Employment : The scheme will benefit about 200 families with consequent increase in rural income.

1. Background Information

In 1979, HALCROW-ULG LTS1, British consulting firm was commissioned by the Overseas Development Administration to carry out, for NAFCC, a full feasibility study for the development for the Madibira Rice Scheme. The consultants submitted their Final Report in 1981. The objective is to cultivate net area of 8 500 ha mainly for paddy (rice) the area being divided between a large scale farm and a smallholder area.

Detailed engineering study (part of PHASE I) was financed by African Development Bank and is expected to be completed towards the end of October, 1984 done by - Sir William Halcrow and Partners of UK.

2. Location

Madibira Rice Scheme is located (8° 10'S and 34° 42'E) in the eastern corner of the Usungu Plains in Southern Western Tanzania. It is about 80 km north of another (existing) NAFCO Rice Farm of Mbarali, in Mbeya Region.

3. Proposed Development

Trials will have to be instituted from the outset to find out the possibilities of cultivating paddy, wheat and other crops during the off-season. Rainfed farming will also be expanded.

The proposed development will require flood protection works irrigation and drainage and a reservoir on the Ndemera river.

3.1 Phase I

This will involve the run-off-river development of 3 600 ha for irrigated paddy, with 1 000 ha for the smallholders (SH) and the remaining 1 600 ha for the large scale farm (LSF) under NAFCO. This phase also includes improvement and extension of existing rainfed agriculture of up to 2 150 ha.

Table I: Phase I Cropped Area

Farm	Wet Season Irrigated Area (ha)	Rainfed Area (ha)	Off-season Irrigated Area (ha)
LSF	1,600	1,100	350
SH	2,000	1,050	450
Total	3,600	2,150	700

From Table I it can be seen that there is still some sufficient water to also irrigate a dry season crop of maize on 700 ha. The total capital investment for phase I is US \$15.0 million (Tshs. 164.0 million).

3.2 Phase II

This phase will involve the expansion of the irrigated area to about 8 500 ha by the use of a storage reservoir (constructed in Phase I) on the Ndemera river. The division between SH and LSF is as follows :-

Table II: Phase II Cropped Area

Farm	Wet Season Irrigated Area (ha)	Rainfed Area (ha)	Offseason Irrigated Area (ha)
LSF	1,900	500	1,800
SH	2,800	1,050	2,000
Total	4,700	1,550	3,800

This phase is estimated to cost US \$17.4 million (T.Shs. 305.0 million).
The combined phases I and II is therefore as follows :-

Table III

Farm	Wet Season Irrigated area (ha)	Rainfed Area (ha)	Offseason Irrigated
LSF :	3,500	1,690	2,050
SH :	4,890	2,100	2,450
Total	8,390	3,790	4,500

Total capital investment cost :

US \$32.5 million (T.Shs. 569.0 million), broken as shown in table IV.

Economic Analysis

The following is the economic analysis of the project :-

Phase I

	Phase I		Phase I & II combined	
	<u>EIRR%</u>	<u>NPV</u> (T.Shs.m)	<u>EIRR%</u>	<u>NPV</u> (T.Shs.m)
Smallholders (SH)	10.5	48	11.5	130
Large Scale Farm (LSF)	9	11	10.5	57
Whole Project (SH & LSF)	10	59	11	187

Note : EIRR = Economic Internal Rate of Return
NPV = Net Present Value at 8% discount rate.

4. DROUGHT RELATED PROJECTS

- 4.1. SADCC region was hit by a devastating series of droughts which have severely threatened the economic fabric of a number of member states. This state of affairs was unfortunate especially in view of the fact that the longer-term regional food security programme was still at an embryonic stage to be of any practical assistance. SADCC member states are struggling within and beyond the limits of their slender resources to combat the worst effects of the drought, and at the Lusaka Conference a major appeal was made for international assistance. Although it is not possible to give any overall figure for the support which has been received, this appeal has met with a positive response from the international community.
- 4.2. However, a number of SADCC drought-related projects have not received funding and are being re-submitted at the Mbabane Conference in January/February 1985. The status of the projects is as follows:

TABLE I

SADCC APPROVED DROUGHT-RELATED PROJECTS - STATUS AS AT SEPTEMBER 1984

NO.	COUNTRY	TITLE	FUNDED	IN NEGOTIATION FOR FUNDING US\$ M	FUNDING NOT YET SECURED US \$ Million	REMARKS
	Angola	No project because the drought stricken area was under foreign military occupation.				
	Botswana					
1	"	Food Aid	18,797			Donors include CIDA, W. Germany, EEC, WFP
2	"	Seed Supply Programme			2,200	
3	"	Drought Power Assistance			0,500	
4	"	Destumping			0,840	
5	"	Cattle Purchase Scheme			0,500	
6	"	Vaccine and Cattle Feeds			0,963	
7	"	Water Relief Programme			1,500	
8	"	Labour based Relief Programme			7,350	
9	"	Gaborone Water Supplies			20,000	
10	Lesotho	Rehabilitation of Conservation Works			0,609	
11	"	Destocking Project			14,735	
12	"	Irrigated Vegetable Production			6,960	
13	Malawi	Grain Storage Study			0,050	
14	"	Subsequent Storage			12,000	
15	"	Domestic Water Supplies			1,000	
16	"	Small Irrigation Schemes Study			0,200	
17	"	Study on Irrigated & Drought			0,175	
		Total Carried Forward:-	<u>18,797</u>		<u>69,582</u>	

SADCC APPROVED DROUGHT RELATED PROJECTS (CONTINUED) STATUS AS AT 1ST SEPTEMBER, 1984

NO.	COUNTRY	TITLE	FUNDED	IN NEGOTIATION	FUNDING NOT	REMARKS
			US \$ M	FOR FUNDING US\$ MILLION	YET SECURED US\$ MILLION	
17		Brought Forward	18,797		69,582	
18	Mozambique	Food Aid	18,200	3,000	22,000	Includes normal and emergency food aid
19	"	Production Incentives	(some given)		14,065	No accurate data available
20	"	Seeds	(some given)		5,558	Substantial support given
21	"	Borehole Drilling & Rehabilitation			2,634	
22	"	Rehabilitation of Irrigation Schemes	2,500 ECUs	8,000 ECUs		EEC
23	"	Animal Feed			3,505	
24	Swaziland	Food Aid	1,806*		1,074	
25	Tanzania	Food Aid			20,358	
26	"	Water Dev, and Ranch Management			10,000	
27	Zambia	Zambezi Water Resource & Irrigation		*	0,250	
28	"	Lukanga Water Development			0,250	
29	"	Luano Area. Agricultural Project			0,250	
30	Zimbabwe	Small Scale Irrigation Fund		13,000		Canada
31	"	State Irrigation Schemes		27,000		Italy
32	"	Major Dams (4 Projects)		57,700		Italy
33	"	Credit Fund & Borehole & Dams		5,000		Canada
Total			23,102	113,000	139,526	

TABLE 2 MOZAMBIQUE DROUGHT RELATED PROJECTS : SITUATION AS AT THE 31ST AUGUST 1984

<u>Project Title</u>	<u>Funds Sought</u>	<u>Funded</u>	<u>Under Negotiation</u>	<u>Funds not yet secured</u>	<u>Remarks</u>
	US \$	US \$	US \$	US \$	
1. Food Aid	22 000 000	18 200	3 000		Received through bi-lateral agreement. Include emergency and normal food aid for the donor countries. See the attached annex.
2. Production Incentive	14 065				Accurate data not yet available
3. Seeds	5 558				Substantial support was received. Accurate data not yet available.
4. Borehole drilling	2 634	-	-	2 634	
5. Rehabilitation Irrigation Schemes	12 000 000	2 500 ECU	8 000 ECU	-	General support by EEC to Rovuma, a Southern District of Mozambique which was seriously affected by drought.
6. Animal Feed	3 505	-	-	3 505	

4.3. Emergency assistance by Angola

Proposed Measures

Angola presents the following projects for funding:

- Projects: 1- Immediate emergency aid
2- Replacement of seed stock in the peasant sector.

The seed stocks have reached a critical situation, this situation has become worse over the last few years. The distribution sector itself has become somewhat disorganized. This situation has led to a reduction in the quality of seeds, and the failure to allocate new more resistant and productive strains means that at present Angola has one of the lowest productivity records per capita in Africa.

As for example:

400 Kg of Maize per hectare vs an average African production of 1.200 Kg per hectare.

900 Kg of Rice per hectare vs an average of 1.700 Kg per hectare for the Continent.

As it is we must make a tremendous effort to replenish stocks in the country with new varieties that international research has placed at the disposal of under-developed countries. However the availability of finance within Angola is not sufficient for a program that would attain success in the vast region affected by the drought.

We judge the time opportune to request, from the various Organisations who mediate in the coordination of International Aid for drought relief and the re-establishment of production in the short term, a special awareness on the part of donors, for future offers to be in the form of seed. Immediate necessities being:

SEED	QUANTITY (Tons)	PRICE/TON (US\$)	TOTAL COST (US\$)
Maize (open pollinated)	250	750	187.500
Sorghum (open pollinated Swazi)	30	600	18.000
Rice (Hydromorph. Swamp)	400	350	140.000
Rice (pluvial)	100	350	35.000
Butter Beans	200	750	150.000
Cowpea Beans	200	750	150.000
Ground Nuts	300	550	165.000
Vegetables (see appendix)	27,5	200	5.500
TOTAL	1.507,5		851.000

4.2.- Short term measures.

- 4.2.1.- Creation of an Agricultural Experimental Station in Luanda.

IDENTIFICATION AND SUMMARY:

Geographical cover - - - - - National
Origin of the project - - - - - Submitted by the Government
of Angola
Project compiled by - - - - - Institute of Agronomic Research
and N.D.A.P.O. MINAGRPT.

Nature of the project

It aims to obtain concrete answers about agricultural problems of the north and the centre of the Coastal Zone of the People's Republic of Angola at an average short term. The problems are caused by semi-arid climate characteristic and cannot be resolved without carrying out an experiment there.

However the proposed creation of an Agricultural Experimental Station will include a soil Analysis Laboratory and a Seeds Testing Station on the outskirts of Luanda city and should dedicate itself to the experiment, betterment and multiplication of selected cultural seed varieties of the following groups of culture:

- Agamic: banana, sweet potatoes and bread banana
- Arvenses: sorghum, millet and cow peas
- Vegetables: tomatoes, beans and cabbage.
- Oleaginous: sunflower and peanut

This station will be called Agricultural Experimental Station of Luanda, it will occupy an area of 45 ha and it will be situated at about 7 km from Luanda city in Sapu Zone. It will initially function under the administration of National Direction of Agrarian Production (NDAP) and under the guidance of the Institute of Agronomic Research Station (IAS).

Justification

More than one quarter of the total population of the country lives in the north and the centre of the Angola coast, where there is a semi-arid megathermic climate and about three quarters of that area is urbanized and as a result neither satisfactory knowledge of more appropriate cultural techniques nor more adaptable cultural varieties are still existing, because of this circumstance we are faced with seeds renewal obligation in different cultures externally obtained without a choice option because no previous experiments were carried out due to the non-existence of Agricultural Experimental Centres in the agro-climatic region.

The station should also dedicate itself to the basic multiplication and supplying of seeds and propagate selected seeds, in order to reduce external dependence in this field.

The only existing Agricultural laboratory in the region is completely devastated and unsuitable for any installations and it does not have any minimum functioning possibility. Its change has already been discussed by the top and Agricultural Experimental Station is responsible for its integration.

Large part of the necessary material for its fitting out has been accumulated already. The material has not been utilized yet and its still packed.

The place is in the outskirts of Luanda City as it is proposed for an Agricultural Experimental Station, it has the advantage of facilitating a more efficient articulation with other services of technical support such as the University of Angola by the collaboration of their teaching discern cadres and their laboratories, the cadres of Centres Structures of the Ministry of Agriculture, Agricultural mechanization as well as avoiding housing construction expenditure for necessary staff and for social infrastructures.

DESCRIPTION OF THE PROJECT

The Agricultural Experimental Station will occupy an area of 45 hectares in Sapu area, about 7 km south of Luanda City with soil characteristics similar to the majority of the region's soil.

Four culture sectors will be created with about 10 hectares each.

Agamic Sector

Arvenses Sector

Vegetables Sector

Oleaginous

The Station will be responsible for the preparation of seeds and the seeds will propagate themselves especially in the following cultures by the year 1986.

Agamics: Cassava (500 ha), Sweet Potato (250 ha) Bread Banana (100 ha)

Arvenses: Sorghum (500 ha), Millet (100 ha) Cow Peas (100 ha)

Vegetables: (500 ha)

Oleaginous: (500 ha) Peanut (100 ha)

Construction work to be as follows:

- 2 pavilion with about 1000m² each
- 1 workshop
- 1 store room
- 1 Machine parking garage
- 4 residential houses with four divisions
- 12 residential houses for agricultural workers
- 2 - 1. 000m³ water tanks.

NECESSARY MATERIAL (US\$)

<u>UNIT</u>	<u>FINANCING DETAILS</u>	<u>1983/5</u>	<u>1985/6</u>	<u>1986/7</u>	<u>Total</u>
	<u>CONSTRUCTIONS</u>				
2	1.000m ² pavilion	\$400.000	\$400.000		\$800.000
1	100m ² workshop	\$25.000			\$25.000
1	200m ² store room		\$50.000		\$50.000
1	200m ² machine parking garage	\$40.000			\$40.000
4	Residential houses for agricultural workers	\$100.000	\$100.000	\$200.000	\$400.000
12	residential houses with	\$80.000	\$80.000	\$80.000	\$240.000
2	Water tanks 1000m ³	\$20.000	\$20.000		\$40.000
	<u>Vehicles</u>				
1	30 seater bus		\$40.000		\$40.000
2	Light vehicle Renault type	\$6.000	\$6.000		\$12.000
2	Station wagon vehicle	\$30.000			\$30.000
6	Wide type of Jeep	\$36.000	\$36.000		\$72.000
2	10 Ton Truck	\$40.000	\$40.000		\$80.000
2	45 PP Tractors	\$40.000			\$40.000
	<u>Equipment</u>				
1	25m ³ Seeds conservation unit with coolage and temperature automatic control	\$35.000			\$35.000

	Transport	\$817.000	\$807.000	\$280.000	\$1.904.000
1	Seed drying unit		\$ 30.000		\$ 30.000
2	Motor pump and complete watering equipment classic type 20 ha	\$ 20.000	\$ 20.000		\$ 40.000
2	4,5 ton trailer	\$ 5.000	\$ 5.000		\$ 10.000

Laboratory Equipment

1	Electronic Scale METTLER E 2000	\$ 1.300			\$ 1.300
1	Humidity recorder OHAUS 6010H or SUPERMATIC	\$ 1.100			\$ 1.100
2	Germinating machine HOFFMAN	\$ 4.000	\$ 4.000		\$ 8.000
2	Hot humidity House	\$ 2.000	\$ 2.000		\$ 4.000
4	Microscopes	\$ 12.000			\$ 12.000
4	Einoculars	\$ 12.000			\$ 12.000

Audio Visual Equipment

1	Filming machine			\$ 3.000	\$ 3.000
3	Photographic machine			\$ 3.000	\$ 3.000
1	Diapost projector			\$.500	\$.500
1	Film projector			\$ 3.000	\$ 3.000
1	Retroprojector			\$.500	\$.500
2	Ecrans			\$.900	\$.900

Office Equipment

3	Photocopier machine		\$ 4.200	\$ 2.100	\$ 6.300
1	Electronic stencil machine		\$ 5.000		\$ 5.000
1	Polycopier machine		\$ 3.000		\$ 3.000
4	Manual typewriters		\$ 4.800		\$ 4.800
2	Electric typewriters	\$ 6.000			\$ 6.000

2	Calculators HP 41CC card reader and printer	\$.900	\$.900	\$ 1.800
20	Air conditioners	\$ 10.000	\$ 10.000	\$ 20.000
25	desks	\$ 20.000		\$ 20.000
20	Metallic Cabinets	\$ 5.000	\$ 5.000	\$ 10.000
10	Deep freezers	\$ 5.000	\$ 5.000	\$ 10.000
	TOTAL	\$880.000	\$925.900	\$311.900 \$2.118.200

Necessary Manpower

Cadres Units	Already Existing	Units to be recruited	
		Nationals	Expatriates
Chief of Department	1		
Deputy Chief of Depart.		1	
<u>Administrative Sector</u>			
Chief of Sector		1	
Store room worker		1	
Clerks		3	
<u>Machine and Workshop Sector</u>			
Chief of Sector		1	
Junior mechanization technician			1
Basic mechanization technical		2	
Driver		4	
Tractor Driver		3	
<u>Laboratorial Support Sector</u>			
Senior technician		1	1
Junior Technician	5		
Basic Technical	3		
<u>Horticultural Sector</u>			
Senior Technical	1		
Junior Technician	1	1	
Chief of Brigade		1	
Agricultural workers		5	

Arvenses Sector

Senior Technician	1
Junior Technician	1
Chief of Brigade	1
Agricultural Workers	5

Agamics Sector

Senior Technician	1	1
Junior Technician		1
Brigade Chief		1
Agricultural workers		5

Oleaginous Sector

Senior Technician	1	
Junior Technician	1	
Chief of Brigade		1
Agricultural		5

4.3.- Short and medium term measures.

4.3.1.- Implementation of small scale Irrigation Schemes

The serious drought situation shown in this document requires the application of the minimum viable measures to counter this adverse situation.

We believe that one solution, even though only a partial one, is to introduce small Irrigation Schemes, either utilizing some of the relatively dense river networks, or constructing reservoirs.

Little has been done in this regard in Angola, since the colonial Government never considered supporting the peasant farmer and, after Independence as there was a lack of experts due to their having left, the procedure is to direct them more immediate and viable ways of supporting production.

Because of the above and the situation already highlighted in previous projects of the lack of technical and financial facilities the R.P.A. request the following from future donors:

- Technical assistance to identify these regions and set up small scale Irrigation Projects through a team of experts with a budget of US\$300.000.
- A long term loan with favourable interest and a 3 year period over which to acquire the following equipment for the formation of three small support crews for the construction of small dams.

	COST/UNIT	TOTAL
Caterpillar tractor of 160 to 200HP with bulldozer and ripper-3	300.000	900.000
Self loading motorized earth mover 1-330HP and 16 mm ³ capacity	150.000	150.000
1-450HP and 26 mm ³ capacity	200.000	200.000
1-Steam roller or 2 vibrator compacters	120.000	120.000
1-Grader with differential transmission and Hydraulic blade-180HP	150.000	150.000
3-Tip trucks of 10-12Ton	80.000	240.000
3-Four wheel driver light vehicles	30.000	90.000
TOTAL US\$		1.850.000

MINAGRI has anticipated immediate action in this regard that can be considered an approximate survey of the potential areas for small Irrigation Schemes to support the peasant farmer with subsequent acquisition of small motor pumps for distribution to these peasants.

4.4. The following rehabilitation projects from Swaziland are re-submitted for funding at the Mbabane Conference in 1985:

<u>TITLE OF PROJECT</u>	<u>TOTAL ESTIMATED COST OF PROJECT IN E 000 (Swaziland currency)</u>
(1) Rehabilitation of Rural Water Supply (plus Irrigation Schemes):	4 250
(2) Rehabilitation of Government Cattle Breeding Stations and Fattening Ranches	: 1 200
(3) Rehabilitation of the Foot and Mouth Cordon Fence along the Mozambique Border with Swaziland	: 750

(4)	Rehabilitation of Agricultural Production	1 600
(5)	Rehabilitation of Cattle Dip Tanks	1 100
		<hr/>
		8 900
		<hr/>

4.5. With the exception of the five projects from Swaziland which are new projects, the details of the other projects are contained in the Food and Agriculture documents of January 1983, Maseru, and Lusaka, January 1984.

Details of the five projects from Swaziland will be made available at the Mbabane Conference.

ANIMAL DISEASE CONTROL

INTRODUCTION

1. Animal disease control is identified in the Lusaka Declaration, Southern Africa : Toward Economic Liberation, as a priority area for SADCC cooperation and responsibility for coordinating this sector was given to Botswana at the founding Summit meeting of the organisation in April 1980. The justification and the need for regional cooperation in the field of animal disease control is self-evident. The livestock industry is of major and growing importance to a number of the region's economies and is a means of livelihood and a source of employment for a significant section of the region's population. The viability and the development of these economic resources depend, to a great extent, on the ability of member states to protect the region's herds from disease. Diseases, like Rinderpest, could, if allowed to spread, decimate SADCC livestock and thus destroy one of the region's major sources of protein and a crucially important supplier of draught power and manure for crop production. Disease is no respecter of borders or political boundaries and the only effective policy for its control and elimination is a policy of regional cooperation built on strengthening national programmes and institutions. This is the policy which SADCC is seeking to implement.
2. Since April 1980, SADCC Veterinary Officers have met on a regular basis to exchange information on the disease situation in their respective countries; to agree a joint policy and approach to the problems which they have in common; and to identify projects and programmes which would, through regional cooperation, make a significant contribution to the struggle against the spread of such diseases. To date nineteen projects have been identified and in excess of US\$40 million is committed to, or under negotiation for, the implementation of these projects. It is envisaged that the scope and size of the programme will grow considerably in the coming years and it will, therefore, require a significant increase in support from SADCC cooperating partners.
3. The Animal Disease Control report is divided into two sections: the first contains a summary of the status of all the approved projects in this sector of SADCC cooperation; the second contains project documentation. The report does not repeat the documentation which has been circulated in previous Conference papers. The detailed documentation for a number of projects which still require funding can, for instance, be found in the Food and Agriculture papers prepared for the Maseru Conference in January 1983. In each case, however, a reference is given to indicate where the relevant information can be found. If any difficulties are experienced in obtaining this documentation please do not hesitate to contact the Coordinating State, Botswana, or the SADCC Secretariat.

4. Although considerable support has been mobilised from the international community for a number of priority projects, others have, as yet, unfortunately failed to find backers. Programmes relating to the control and elimination of Foot and Mouth Disease, Rinderpest, Trypanosomiasis are well established or will commence implementation shortly. Further support is, however required for projects relating to each of these diseases. In addition financing is required for a number of priority projects which were presented to the Maseru Conference in January 1983. A special appeal is made to SADCC cooperating partners to examine carefully those projects which have failed to secure support in the past.

5. SADCC Ministers of Agriculture, at their meeting in Maseru in September 1984, approved five new projects for inclusion in the region's animal disease control programme: a tsetse control programme in Malawi, Mozambique, Zambia and Zimbabwe and a related though existing tsetse control training centre in Zambia; the extension of the existing Rinderpest control programme in Tanzania; the extension of the Foot and Mouth eradication programme to cover Malawi; the establishment of a programme for the eradication of East Coast Fever in Malawi, Mozambique, Tanzania and Zambia by immunisation methods (this supercedes a previous East Coast Fever project); finally a new project covering the epidemiology and control of African Swine Fever in Mozambique, Malawi, Zambia and Angola. Project documentation relating to Foot and Mouth disease control in Malawi, East Coast Fever and African Swine Fever will be circulated at the Mbabane Conference.

PROJECTS

A. Completed Project

1. Feasibility Study on Regional Foot and Mouth Disease Control and General Vaccine Production(2.0.1)

This study, which was originally presented to the Blantyre Conference in November 1981, was funded by the European Economic Community at a cost of US\$400,000 and the final report has been submitted to, and accepted by, SADCC. Although the consultants recommended a further study, this proposal was not endorsed by the SADCC Veterinary Sub-Committee. The project is completed.

2. Botswana/Zimbabwe Border Fence; Vakarungu/Basoto Border Fence (2.2.1)

This project, which was also originally presented to the Blantyre Conference, has been completed with support from the European Economic Community and at a cost of US\$500,000.

B. Project Under Implementation

1. Eradication of Foot and Mouth Disease Along the Botswana/Zimbabwe and Zambia Border(2.2.2)

After having been free from Foot and Mouth Disease for more than twenty years, Botswana's eastern border experienced an outbreak of the disease in February 1980. The source of the infection was cattle illegally moved from south western Zimbabwe. This project, which involves a major vaccination programme and which is being funded by the European Economic Community at a cost of 12.2m ECU, was originally limited to Botswana and Zimbabwe but subsequently expanded to include Zambia.

It has not been agreed by SADCC Ministers of Agriculture that this ongoing project should be expanded again, this time to cover Malawi. The cost of the additional component to the project is estimated at US\$120 000. Detailed documentation, together with a break down of the costs involved, will be made available at the Mbabane Conference.

2. Regional Meat Inspectors Training School, Lobatse, Botswana (2.2.3)

Three SADCC Member States are fresh meat exporting countries, Botswana, Swaziland and Zimbabwe, and at the moment they depend on external institutions for the training of meat inspectors. Furthermore the number of places offered to students from the region in these institutions is inadequate to meet the need.

This project, which was originally presented to the Blantyre Conference and which is being funded by DANIDA and executed by the Food and Agriculture Organisation of the United Nations (FAO), is under implementation. A director for the School has been appointed and it is anticipated that classes will begin in early October 1984. The first intake of students will come from Botswana since the teaching and hostel facilities are not yet complete to accommodate students from outside the country. These facilities are, however, nearing completion and details of admission will be communicated to member states shortly. The cost of this project amounts to US\$2.4m and it is fully funded.

3. Control and Eradication of Rinderpest in Tanzania (2.7.1)

Rinderpest is probably the greatest threat to SADC's animal industries and to its wildlife. Outbreaks have already occurred in Tanzania among the wildlife. It is, therefore, essential that this disease be eliminated before it breaks through the susceptible herds in other SADC countries. The SADC Veterinary Sub-Committee considers this the single most important and urgent project.

The emergency phase of this project, which involved the strategic vaccination of livestock in the affected and high risk areas, is complete. Furthermore, the European Economic Community agreed to provide US\$3.7m to enable phase one of the project to commence. Implementation of this phase will begin shortly.

In addition, however, SADC is seeking a further US\$1.1 m for the second phase of this project, which will provide Tanzania with the necessary maintenance vaccine which will be used after the whole herd has been vaccinated. Project documentation for phase two can be found at Annex A (documentation to the first phase can be found on page 239 of the SADC Maseru papers).

4. Animal Disease Reference Laboratory -Zimbabwe (2.9.2)

In the past, and at the moment, many SADC countries depend on either developed countries or on South Africa for diagnosis and research in certain major animal diseases. This project will extend the diagnostic and research laboratory for certain diseases prevalent in the SADC region.

A financing agreement has been signed with DANIDA for the project, the costs of which amount to US\$2.5m and construction will begin in early 1985. The project is fully funded.

C. Project Requiring Support

1. Regional Foot and Mouth Vaccine Bank (2.0.2)

Speed of delivery and efficacy of vaccine is essential in Foot and Mouth Disease control. This project, which was originally presented at the Maseru Conference in January 1983 and which was given a high priority by the SADC Veterinary Sub-Committee, is designed to establish a stock of vaccine that will be released to Member States at short notice without going through long processes of acquiring funds and foreign exchange. Outbreaks can thereby be contained quickly. This will, in the long run, be far cheaper than controlling large scale outbreaks. The total donor funding sought is US\$7.2m and the project documentation can be found at page 196 of the SADC Maseru papers.

2. Tsetse Eradication: 1. North Western Botswana and
2. South Western Zambia (2.2.4)

The smallest tsetse fly belt in Africa includes the Okavango Delta in Botswana, the Caprivi, south eastern Angola and south western Zambia. Since 1972 a study of the efficacy and safety of the aerial method of tsetse fly control using ultralow volume endosulphane droplets has been carried out in Botswana. It has been proved technically that tsetse fly can be eradicated safely with minimum damage to non-target species using endosulphane. The purpose of these two projects, which were originally presented to the Blantyre Conference, is the eradication of the fly from this tsetse fly belt by these means. Although discussions

have taken place with Canada CHA on the funding of these projects no definitive agreement has yet been reached. The total donor funding sought is Pula6.2 m and Kwacha 2.28 m respectively. The project documentation can be found at Page 107 of the SADCC:Maseru papers.

3. Tsetse Control - Malawi/Mozambique/Zambia/Zimbabwe (2.8.2)

A feasibility study has been successfully completed on how tsetse can be controlled and eradicated from north east Zimbabwe, south east Zambia, north Mozambique and Malawi. The implementation of this three-year eradication programme is estimated to cost US\$19.75 m. The European Economic Community has indicated a willingness to contribute to the costs of implementing this project. It is anticipated that their contribution will come from both regional funds and from resources earmarked for individual countries. The project documentation can be found at Annex B.

4. Tsetse and Trypanosomiasis Training Centre - Zambia (2.8.3)

Although this is a new SADCC project, it is seeking support for an existing institution in Zambia to ensure that it can continue to play a useful regional role. The Centre, which provides low and middle level manpower training, is run with the assistance of the Food and Agriculture Organisation of the United Nations (FAO). The costs involved in this project amount to \$2,445,480 and the project documentation can be found at Annex C.

5. Strategic Prevention of Rinderpest - Malawi/Zambia(2.4.4)

The objective of this project is to vaccinate annually cattle in the northern border districts against Rinderpest and to strengthen disease surveillance patrols in the border areas. The vaccination campaigns should create an immune barrier of cattle along Malawi's and Zambia's northern borders to prevent southward spread of Rinderpest from its present foci in Tanzania. Canada has expressed an interest in supporting this project, which was first presented at the Lusaka Conference, but no firm commitment has been made. The cost of the project is estimated at EM 1.47 m and the relevant documentation can be found at Annex D.

6. Establishment of a Zoonosis Centre - Zambia (2.8.1.)

The project, which was first presented to the Blantyre Conference, seeks financial and technical support for the development of a SADCC Centre for Zoonosis for: the surveillance of zoonosis; to serve as a SADCC reference centre; to serve as a standards institute for biologicals; to serve as a quality control centre; and to promote research and training programmes for the control and eradication of major zoonosis affecting the development of SADCC Member States. Portugal has expressed an interest in providing technical support for this project but no agreement has yet been reached. The total donor funding sought for this project is US\$5.17 m and the project documentation can be found at page 120 of the SADCC:Maseru papers.

7. East Coast Fever Control by Immunisation and Treatment Methods - Malawi/Mozambique/Tanzania and Zambia (2.0.3)

East Coast Fever is a tick-borne disease which results in the death of many cattle in east and certain parts of central Africa. At the moment there is no treatment and no vaccine. The Malawi authorities are, however, continuing to make some tests to develop a vaccine. These tests have been extended to Zambia and the authorities in Tanzania have also requested that their country be included in this programme. This disease represents a major problem for the countries affected

and it is spreading to areas formerly free of contamination and, indeed to other countries.

SADCC presented a project relating to the control of East Coast Fever at the Maseru Conference which failed to secure support. This new project proposal incorporates a much more clearly defined regional character. Documentation relating to this project, together with a detailed estimate of the costs involved, will be made available at the Mbabane Conference.

8. Tick and Tick-borne Disease Centre - Malawi (2.4.1)

In most of the SADCC countries tick-borne diseases are the most important factor limiting development of livestock. It is therefore proposed that a centre be established in Malawi for research into a solution to this disease problem. The total donor funding sought is US\$14.2m. The project was originally presented to the Blantyre Conference and project documentation can be found at page 141 of the SADCC:Maseru papers.

9. Integrated Animal Disease Control - Tanzania (2.7.2)

This project is designed to control animal diseases in southern Tanzania bordering with Malawi and Zambia. The project will establish an infrastructure for the control of a number of animal diseases. The sharing of facilities will reduce costs. The total donor funding sought is US\$4 230 000 and the project document can be found at page 199 of the SADCC:Maseru papers.

10. Equipment of the Biological Substance Laboratory in Mozambique (2.5.1)

This project is designed to strengthen the biological substance laboratory to produce various vaccines and sera used in the control and diagnosis of animal diseases. The total donor funding sought is US\$2.7 m and the project documentation can be found at page 248 of the SADCC:Maseru papers.

11. Foot and Mouth Disease Control - Malawi/Tanzania/Zambia Borders (2.4

This project, originally presented at the Maseru Conference, is designed to control and prevent the spread of Foot and Mouth Disease for some northern parts of Tanzania to south western Tanzania, northern Zambia and northern Malawi. The total donor funding sought is US\$1.3m and the project documentation can be found at page 155 of the SADCC:Maseru papers.

12. Epidemiology and Control of African Swine Fever - Mozambique, Malawi, Zambia and Angola(2.5.2)

This project seeks funding for a study which will provide the basis for a control and eradication programme. African Swine Fever is a major and growing problem to the countries affected by the disease. Documentation relating to this project together with a detailed estimate of the costs involved will be made available at the Mbabane Conference.

13. Production of Inactivated Rabies Vaccine - Lesotho (2.3.1)

Rabies has only been evident in Lesotho since 1982. This project, which is important for both economic and public health reasons, will contribute to the control of the disease in Lesotho. The project documentation can be found at Annex E and the costs involved amount to US\$288 472.

PROJECT NO: 2.7.1.

ANNEX A

PROJECT TITLE: CONTROL/ERADICATION OF RINDERPEST IN TANZANIA

SUMMARY

Recipient Country: Tanzania

Other Beneficiaries: SADCC Member - States

Govt. Implementing Agency: Division of Veterinary Services

Estimated Starting Date: October 1984

Duration: 36 Months

Government Input: US \$ 2.6M

Donor Inputs: US \$ 4.75

Funds from Donor Secured: US \$ 3.75M (ECU 4.3M)

Donor: EEC

Additional Funds Requested: US \$ 1.1M

Objectives: To vaccinate annually the whole national herd for three years so as to avoid possible socio economic unrest that will follow the outbreak of Rinderpest and as a guarantee for non-spread of the disease to the southern member countries of SADCC.

Introduction

Rinderpest is an acute highly contagious disease, primarily of cattle and buffalo, characterised by inflammation, fever, haemorrhage, and erosion and necrosis of the mucous membranes of the digestive tract. It is caused by a virus which at various stage of infection is present in all body tissues, fluids, and discharges, and is concentrated in lymphoid tissues. The morbidity rate approaches 100% and the mortality rate may exceed 90% in fully susceptible cattle; recovered animals, however, remain permanently immune.

These two facts - i.e. the high mortality in susceptible animals and the permanency of the immunity following recovery/vaccination makes it of high priority in animal disease control programmes as well as a relatively simple disease to control under adequate resources.

Recent History of Rinderpest in Tanzania

The last major outbreak of Rinderpest in Tanzania began in Northern Tanzania in 1959 and caused high mortality in cattle. It was, however, brought under control by quarantine and vaccination, with the last recorded case occurring in 1965. Annual vaccination campaigns against Rinderpest were, therefore, instituted since then, using the highly effective tissue culture vaccine, in a barrier zone comprising parts

of northern and Lake Zones, where the risk of re-introduction was considered to be greatest.

Action Taken

Following this revelation, an emergency appeal for assistance was lodged with Food and Agriculture Organisation of the United Nations (FAO) and the European Economic Community (EEC).

Using FAO donated vaccine (a total of 3m. doses), emergency ring vaccination was mounted in both Serengeti and Ngorongoro National Parks, as well as around Kitete District covering some thirteen districts which constituted high risk areas. In six weeks, starting 5th May, 1983 a total of 1,488,563 susceptible cattle were vaccinated. It is now considered that the disease has been well contained in cattle from this focus of infection, and there are also no further reports of the disease being suspected in the wildlife.

This was the First Phase of the emergency vaccination campaign against Rinderpest.

The Second Phase

Complementary to the FAO emergency assistance mentioned above, and following a request by the Tanzania Government, the Commission of the European Communities decided on 2nd June, 1983 to grant to the Government of Tanzania ECU 400,000 (US \$350,000) under the 5th EDF. By 13th October, 1983 4m. doses of Rinderpest vaccine, twelve Land Rovers and Vaccination equipment had been received in the country. This enabled the Government to continue the strategic emergency vaccination campaign in risk areas and also as a first step in assisting to prevent the spread of rinderpest to either SADC countries as well as spread westwards to Rwanda, Burundi and Zaire.

This second phase was to cover all susceptible cattle in the areas north of the Central Line which runs across the middle of the country, and in border districts in the South-West, adjoining Zambia and Malawi. Due to several logistical problems, largely grave fuel and tyre shortages, one entire region, Kagera, and some other districts which are considered less risky had, however, to be left out in this emergency campaign. By the end of February 1984, when this phase officially ended, a total of 5,433,076 head of cattle were vaccinated.

Total operational costs amounted to Tshs. 5,634,600/- (US\$ 458,100). In the border districts with Zambia and Malawi, a total of 397,316 cattle were vaccinated.

Tanzania Government Contribution

The Tanzania Government appreciates the grave dangers of Rinderpest and has offered substantial political, financial and administrative support. For the year 1983/1984, the Government had classified Rinderpest control as a development as well as a recurrent item, allocating a total of Tsh. 17 million (US \$ 1.42m.). This money paid for campaign operational costs, surveillance and for the construction of permanent vaccination crushes which are very key items for a successful campaign. Meanwhile livestock owners actively supported the campaign programme. It is estimated that contribution of livestock owners in monetary terms amounted to some US \$ 570,000. They provided free labour to cattle crush construction, collection of firewood for branding, and

in many cases free food for the vaccinating teams.

Three Year SADCC Regional Project

Following the resurgence of Rinderpest in Tanzania and the consequent fear of its spread to other SADCC member states, Tanzania, with the full support of other SADCC member states requested EEC to support financially, a 3 year vaccination programme against Rinderpest involving the total national herd. Consequently, the EEC, in May, 1984, approved the funding of the programme. A total of ECU 4.3m (US \$ 3.75m) have been approved. This money will be used for the purchase of vehicles, vaccination and laboratory equipment, cold chain facilities and radio-communication system. Technical assistance/consultancy is also provided for.

This programme is scheduled to start as soon as all necessary supplies are delivered in the country, most probably in October, 1984.

The Need for Additional Funds

The amount of money requested from the EEC (i.e. ECU 4.3m) was for a strategic Rinderpest control programme designed to cover areas which were at risk of re-infection. These areas excluded the Southern regions of Tanzania - Ntwara, Ruvuma and Lindi - as well as some districts of Nboya Region and the whole of Iringa Region.

At its meetings held at Arusha in Tanzania, August, 1983 the SADCC Veterinary Subcommittee, however, requested that Tanzania, in line with the Pan-African Rinderpest Campaign recommendations, vaccinate the whole national herd to ensure concrete protection of Tanzania's southern neighbours. The Subcommittee also fully supported Tanzania endeavours to seek additional funds for the extended vaccination programme.

At a later meeting in Harare, Zimbabwe, the SADCC Veterinary Subcommittee endorsed and recommended for approval by SADCC Ministers Tanzania's request for an additional US \$ 1.1m. The approval was subsequently given by the Maseru Meeting of Agriculture Ministers in September, 1984.

Tanzania, therefore, through SADCC Regional Programme, seeks an additional US \$ 1.1m. in order to fully cover the whole country in the 3 year Rinderpest vaccination programme partly funded by EEC and which is scheduled to commence in October 1984.

These additional US \$ 1.1m. is requested for the following:-

(a) Purchase of additional	5-4 WD Vehicles	
	@ US \$ 20,000 =	US \$ 100,000
(b) Purchase of extra	5-7 ton lorries	
	@ US \$ 35,000 =	US \$ 175,000
(c) Spare parts of the above	10% of total	
	cost =	US \$ 27,500
(d) Purchase of additional	10m doses of	
	Rinderpest	
	vaccine =	US \$ 797,500
		<hr/>
		US \$ 1,100,000
		<hr/> <hr/>

THE ECONOMICS OF RINDERPEST CONTROL

The Potential Loss from Rinderpest Outbreak

Rinderpest would not be allowed to proceed unchecked in Tanzania. It is, however, most instructive to attempt an estimate of the total loss which would be experienced if an epidemic occurred. Two cases, an outbreak in the barrier zone and a nationwide epidemic, are examined.

These losses when avoided in a central activity may then be considered as benefits accruing to the activity.

First Case: Contained outbreak in high-risk areas of Serengeti, Ngarengere and Bunda Districts - Assumptions:

Total Bovine Population	-	700,000
of which calved	-	150,000
Morbidity Rates:		
(i) Calves	-	0.5
(ii) Adults	-	0.1
Case Fatality Rates:		
(i) Calves	-	0.8
(ii) Adults	-	0.2
Value of Cattle:		
(i) Calves	-	2,000/-
(ii) Adults	-	4,000/-
		<u>Tsh. Million</u>

Value of Losses:

(i) Calves	150,000 x 0.5 x 0.8 x 2,000	120
(ii) Adults	550,000 x 0.1 x 0.2 x 4,000	<u>44</u>
	<u>TOTAL LOSS TSHS. MILLIONS</u>	<u>164</u>

Second Case: Uncontrolled Outbreak - Whole of Mainland Tanzania

A generous allowance for successful vaccination gives a susceptible population of two million calves and eight million adults. Using the above values, less with three different mortality rates are calculated:-

<u>Mortality Rate</u>	<u>Losses in Tsh. Million</u>		
	<u>0.2</u>	<u>0.4</u>	<u>0.8</u>
(i) Calves	400	800	1,600
(ii) Adults	<u>800</u>	<u>6,400</u>	<u>12,800</u>
<u>TOTAL TSH. MILLION</u>	<u>1,200</u>	<u>7,200</u>	<u>14,400</u>

Losses of this magnitude would clearly result in major socio economic dislocation and the country would be placed on an emergency footing long before such a situation occurred. The figures do indicate, however, the top end of potential loss and the need for the most serious effort to contain the disease.

Therefore, apart from the economic importance, the social unrest that will follow the outbreak of Rinderpest in Tanzania and the ever uncertainty on the part of our neighbours whether the disease will spill over into their countries far outweigh the costs incurred in the control of Rinderpest.

PROJECT TITLE: REGIONAL TSETSE AND TRYPANOSOMIASIS CONTROL PROGRAMME
(MALAWI, ZAMBIA, ZIMBABWE AND MOZAMBIQUE)

1. SUMMARY OF THE PROJECT

1.1. Background and Purpose of the Project

Livestock, especially cattle, plays an important role in the economics of Malawi, Mozambique, Zambia and Zimbabwe, both in the use of absolute grazing land as well as supplier of draught power and manure for crop production. It's potential is, however, largely underutilized due to the presence of tsetse and with it Trypanosomiasis. The four countries share a common tsetse fly belt within natural ecological barriers. The infested zones of 322 000 km are extending out rapidly and threaten to close up and with it endanger the existing livestock population. The project aims, in a first phase, to assist Zambia and Zimbabwe in their eradication programme, to survey more closely and confirm tsetse distribution in all countries concerned for future planning and to intensify applied research on control measures with less environmental impact. This should lead in a second phase to a general eradication programme to permanently free the whole area of tsetse fly. The objective is recognised as high priority by SADCC Member States.

1.2. Principal Resources to be Deployed

Funding will be needed for aerial and ground spraying of 20.600 km² including vehicles and their running costs, for tsetse surveys on 80.000 km² and the training of about 120 medium and senior level staff. In addition, ad hoc short-term training courses will be held on specialised issues. Applied research on the basis of work already done in the countries will need to be funded in the field of further adaptation of night aerial spraying to rough country, of tsetse trapping methods and of the impact of chemical tsetse eradication methods on the environment. Funding will also be required to cover costs of regional co-ordination.

1.3. Total costs are estimated at 19.75 million Zimbabwe dollars.

1.4. Means of Implementation

the programme will be coordinated on the regional level by a Standing Committee composed of national representatives meeting three times a year and a permanent secretariat under a regional coordinator specialised in tsetse and trypanosomiasis control. Insecticides, aircraft and vehicles for tsetse survey and eradication will be subject to international tender. Training will be carried out by an existing FAO supported centre in Zambia.* The contribution to research on tsetse trapping methods and aerial spraying development will allow to boost ongoing programmes. Environmental impact studies will be carried out in a cooperative effort by specialised institutions, in close cooperation with the Governments involved. The project will require technical assistance at regional level and partly at national level.

* See Project 2.8.2. at ANNEX C of this Report

1.5. Main Results Expected

Tsetse eradication in Zambia and Zimbabwe will prevent further cattle losses and facilitate the reintroduction of cattle in former cattle-economy areas. Tsetse distribution survey results and training will form the base of the second phase general eradication programme which will be modified or adapted according to research results.

2. BACKGROUND AND PURPOSE OF THE PROJECT

2.1. General background

The project is complementary to the own efforts of the Governments concerned to contain or reduce the incidence of cattle and human trypanosomiasis in the region. Negotiations for the implementation of this project are being undertaken with the EEC and the Governments of Malawi, Zambia and Zimbabwe have, in recognising the priority of the programme, proposed to use funds from their National Indicative Programmes to complement the regional resources which might be earmarked for the programme. Actual existing contributions from other donors in this field in the various countries could, through the proposed regional approach, be coordinated and gain in efficiency. The UK is currently assisting Zimbabwe in manpower for research and aerial spraying development as well as financing technical assistance to the Tsetse Control Department in Zambia. UK has in the past years also assisted Zimbabwe with the supply of chemicals for tsetse eradication. The World Bank is financing isolated spraying actions in Zambia's part of the Common Fly Belt and has shown interest for a complementary eradication effort within the overall proposed strategic programme in the North Western part of Zimbabwe along Lake Kariba. Mozambique receives technical assistance from FAO which includes vehicles and running costs for the tsetse control services. FAO is also running international tsetse control courses in Lusaka.

2.2. Specific Background

2.2.1. Description of the Region

The four countries share an ecological limited tsetse fly zone of which 322 000 km² are tsetse infested. The total potentially reinfestable area is estimated at 567 000 km². Except for a narrow connecting link with the northern Mozambique fly-belt across the lower Rio Zambezi, the common fly-belt is isolated from the other existing belts by either ground rising above the ecological limit of tsetse flies, major water bodies or where the natural woody cover has been extensively removed as in Malawi.

The main tsetse fly species are *Glossina morsitans* and *G. pallidipes*. Species of minor importance are *G. brevipalpis* and *G. austeni* (Mozambique only). Areas within and around the infested zones - formerly cleared of flies - are now rapidly reinvaded because of lack of funds and manpower and because high permanent budget strains to slow down tsetse advancement or to vaccinate cattle.

2.2.2. Problems and Needs to be Covered

Actual cattle numbers within the tsetse infested areas and border zones are 655,000 head while the potential carrying capacity is estimated at 6,764,000 head, that is tenfold the actual numbers. The biggest potential (4.3 million head) and actual lowest cattle numbers (90,000) are in Mozambique.

Cases of human sleeping sickness are rare in Zimbabwe and not well documented in Malawi. The number of cases in Mozambique's Tete Province, bordering all three neighbouring countries, has increased tenfold during 1975-82 to 100 cases per year. In Zambia, the disease in the project area had been reduced from 251 cases in 1972 to a fifth in 1974 but seems on the increase again.

However, in all countries documented cases of sleeping sickness do not reflect the real incidence of the disease, especially in Malawi where no recent survey has been executed.

In addition to the direct effect of Trypanosomiasis on human and livestock population, there is an important negative effect on crop production. The absence of cattle in the peasant farming economy means unavailability of manure and draught power. Yields therefore are depressed and crop areas reduced to hoe-cultivation capacity. Comparisons between non-cattle owners and cattle owners in Zimbabwe show that the cultivated area per family in the first case exceeds rarely one hectare whereas cattle owners cultivate more than double this area. Yields in addition are twice as high. The need for larger and better cultivated land is particularly important in the drier areas to ensure food self-sufficiency even in average years. In Mozambique almost all land must be cultivated by hand due to this constraint. Out of 2,5 Mio ha only 0,1 Mio ha are plough-cultivated. There is such a high potential for extension of cultivated area through draught power.

Further, the defence of areas against tsetse re-invasion and treatment of affected animals binds each year's important resources in the countries concerned. Zimbabwe is spending annually 6, - Mio Z\$ on Tsetse Control, Zambia, Malawi and Mozambique 3,4; 0,6 and 1,2 Mio \$ respectively, without being able, in most cases, to maintain the status quo.

2.3. Objectives and General Design of the Project

2.3.1. Objectives and Beneficiaries

Tsetse Control Phase I

Tsetse eradication will be conducted in North Eastern Zimbabwe on 12,600 km² out of a total infested area of 16,600 km². The area will stretch from Nyanga (North) through Mudzi, Rushinga and Pfura Districts. Population in the total area is estimated at 250,000 and cattle numbers at 113,000. Tsetse eradication would allow to

maintain and increase stock numbers to 207,000 cattle.

In Zambia eradication will be on the northern Lake Kariba shore on 8,000 km² from the Zongwe River eastwards. Population is around 75,000 and cattle numbers are estimated at 80,000. Possibilities for stock increases are considerable (70,000).

Tsetse Surveys

Tsetse surveys will be conducted in three stages.

(1) Loosely spaced grid surveys to verify the presence of flies, detailed surveys before eradication and control surveys after eradication. This first stage is of basic importance for Zambia and Malawi where large areas are suspected to have been recently re-invaded by tsetse. Detailed surveys (2) before and after (3) after eradication will be carried out in the eradication areas of Zambia and Zimbabwe and will also follow up the grid surveys where eradication is planned for Phase II of the Control Programme. Average detailed survey area per country in Phase I is estimated at 20,000 km².

Transborder Survey into Mozambique

To enable Malawi, Zambia and Zimbabwe to plan and implement tsetse eradication measures, it is necessary for them to know the state of tsetse infestation in and beyond border areas in Mozambique. With the cooperation and help of Mozambique staff, tsetse and trypanosomiasis surveys will therefore be carried out into Mozambique. They will be implemented through the Regional Project Coordination with their initial base in Zimbabwe.

Training

Annually, a total of 40 medium to senior level staff coming from all four countries will be trained in tsetse survey, control and management techniques. There will be two types of regular courses, a six month course for senior levels and a two month practical course for medium to senior level staff. In addition, ad hoc short-term training courses will be held on newly developed techniques as trap surveys and aerial spraying or as applied refresher courses for the annual preparation of survey or control activities. Training will take place at the FAO Training Centre in Lusaka, with field stations in Lutale (ZA) and Makuti (ZW).

The training requirements, syllabus and choice of trainees will be agreed upon between the Standing Committee, the Coordinator and the FAO-Training Centre.

Research

Research will be conducted in four areas:

- 1) adaptation of night aerial spraying to rough mountainous country;

- 2) large scale application of tsetse trapping methods;
- 3) adaptation of baited traps and targets to other glossina species in the region;
- 4) environmental impact of chemical eradication methods.

All Night Aerial Spraying has been successfully applied in Zimbabwe in large but relatively flat areas. Night flying in rough country needs further adaptation of electronic guidance systems, flying distance from ground, droplet size and choice of aircraft.

Odour Baited Tsetse Traps developed in the Rukomeche Research Station in Zimbabwe will be tested on large scale trials, both technically and on cost effectiveness, with a view of potentially replacing chemical eradication methods.

Adaptation of Baited Traps and Targets The presence of other tsetse species (*G. austeni* and *G. brevipalpis*) in the neighbouring countries, which do not occur in Zimbabwe, make it necessary to adapt trapping methods to those species and their ecological environment.

Environmental Impact Studies will be carried out concerning the effects of ground spraying with DDT and the new replacing technique of aerial spraying with ultra low volume of Endosulfan - type insecticide. Special attention will be given to effects on aquatic ecosystems in view of the economic importance of fishing in Lake Kariba, Cabora Bassa and especially Lake Malawi. Research will be concentrated on eradication areas along Lake Kariba, mainly in Zimbabwe.

Regional Coordination Regional Coordination will ensure cross border communication and actions between the technical and administrative services of the participating countries. A Standing Committee of representatives of all countries will meet three times a year. It will be assisted by a permanent secretariat headed by a Regional Coordinator experienced in Tsetse Control and assisted by an expert in Trypanosomiasis Control.

2.3.2. General Design

The programme is geared to a systematic and strategic approach to tsetse and trypanosomiasis eradication within the ecological barriers limiting the common fly belt. The basic principle is to increase the countries efforts beyond a critical level in order to pass from defensive to offensive eradication and replace permanent high expenditure by a "once over" investment. Relocation of ongoing eradication actions into the "roll up the carpet" strategy will further increase efficiency and avoid the "island re-invasion" effect of eradication within larger tsetse affected zones. Night aerial spraying

offers, for the first time, the possibility of cost effective large scale eradication without the need to build up extensive national eradication services and logistics. It will also avoid the application of residual insecticides as DDT and replace it with an ultra low volume of non-persistent, partly selective insecticide. The development and application of odour-baited fly traps will greatly facilitate tsetse fly surveys. It will allow to establish temporary or permanent defense lines against fly re-invasion and might ultimately replace other, especially chemical, eradication methods on a large scale. Both techniques, night aerial spraying and odour-baited fly traps will have an immense spin-off for tsetse and trypanosomiasis control elsewhere in Africa, as they allow relatively cheap, large scale eradication without heavy logistical and administrative requirements.

The aim of eradication measures in Zambia and Zimbabwe during Phase I will be to clear areas of tsetse flies that have been re-invaded in the past decade. This will allow the existing population to resume previous full agricultural and livestock production. Tsetse eradication in Phase II of undeveloped and under populated areas will have to be accompanied by parallel development plans and efforts.

3. PROJECT DETAILS

3.1. Technical Aspects of the Project

The programme covers three annual tsetse and trypanosomiasis survey and control periods starting in June 1985 to May 1988, and a preparatory time span beginning at the end of 1984. The project is providing the additional logistical means, supplies, personnel and training to allow the execution of the regional programme complementary to the national ongoing efforts. A total of 21 four wheel drive vehicles and 27 lorries will need to be purchased on regional and national level and 1,68 million trypanosomiasis control drugs supplied. Tsetse eradication in Zambia and Zimbabwe will need to supply of 266 tons of insecticides over three years and financing of flying contracts for aerial spraying over 15,500 km² of tsetse infested areas. Smaller and diversified supplies concern tsetse traps and targets, field equipment as protective clothing, medical supplies, tents, gas lamps and scientific equipment as various stereoscopes, gas refrigerators, glassware, small electric centrifuges and generators, etc. and office equipment will also be purchased for the regional research and survey activities.

The project requires a programme coordinator and a technical assistant in trypanosomiasis control on a regional level. Technical assistance on national level is already supplied or requested from bilateral aid, except for Malawi where an expert in tsetse control and surveys is needed. For the surveys, the additional employment of 2 senior and 19 medium level staff in Malawi and 2 Glossinologists in Zimbabwe will be necessary. A total of about 300 labourers and lower level staff will be additionally employed as well.

The project provides for the training of 36 senior and 96 medium level staff in tsetse and trypanosomiasis survey and control in six and three months courses over three years.

Inter-regional travelling and communication is funded for co-ordination between the national administrations and for Zimbabwe Research and Tsetse Control staff to assist with adaptation of trapping methods and surveys in the other countries.

3.2. Management and Operation

A Standing Committee will plan, supervise and evaluate all activities of the programme. Surveys and eradication will be integrated into a common strategy and results interchanged. Three annual meetings will allow to launch operations (May), to primarily evaluate results and plan (December) and to finalise next season's planning (February). The Regional Coordinator will propose annual programmes, ensure day to day continuity and directly organise and supervise activities at regional level as research, training and trypanosomiasis control planning. Technical and financial responsibility for these regional activities will be undertaken by Zimbabwe. Operations of the individual countries will be executed under their direct technical and financial responsibility.

Transborder tsetse and trypanosomiasis surveys into Mozambique will be coordinated through the Standing Committee and implemented by the Regional Coordinator. Overall responsibility will be undertaken by Zimbabwe. Surveys will start from Zimbabwe territory. Cooperating Mozambican staff will be located in Harare. Costs for this will involve travelling, indemnities and subsistence.

During year 3 the ongoing programme will be evaluated on the basis of information and experience achieved with the aims of preparing in time a Phase II operation.

3.3. & 3.4. See Table on next page

3.5. Implementation Procedures

National survey, eradication and research operations will be subject to annual work programmes and cost estimates and implemented by direct labour. The same principle will apply to regional activities and budgets - coordination, aerial spraying development, odour baited traps and environmental research. These will be agreed upon between the relevant National and Regional Authorities on the basis of annual progress reports and after having been discussed by the Standing Committee. Training awards on a regional level will be funded under standard procedures. Vehicles, drugs for trypanosomiasis control, aerial spraying and insecticides for eradication programmes and generally all other supplies will be purchased after international invitation to tender, except where they are of minor and urgent character.

Funds for aerial spraying development are to provide and increase the logistic and material means to allow the ongoing research by the Tropical Development and Research Institute (UK) to be sufficiently accelerated that results can be expected for Phase II of the programme.

3.3 - 3.4:

SUMMARY OF PROJECT COSTS

TYPE OF COSTS	COSTS (000Z\$)			TOTAL COSTS (000 Z\$)	TOTAL (000 Z\$) INCLUDING 15% CONTINGENCIES	TOTAL (000 ECU)
	YEAR 1	YEAR 2	YEAR 3			
<u>Regional Components</u>						
1. Standing Committee	10.8	10.6	10.6	32.0	38.0	40.0
2. Regional Coordination and Trypanosomiasis Expert	300.0	258.0	258.0	816.0	971.0	1,033.0
3. Aerial Spraying Development	180.0	160.0	160.0	500.0	595.0	633.0
4. Regional Training	200.0	200.0	200.0	600.0	734.0	760.0
5. environmental Impact Study	200.0	150.0	150.0	500.0	595.0	634.0
6. Development and Adaptation of Tsetse Traps and Targets	350.4	79.6	-	430.0	512.0	544.0
SUB-TOTAL 1 - 6						3,644.0
7. Transborder Surveys in Mozambique	549.0	275.5	275.5	1,100.0	1,309.0	1,392.0
SUB-TOTAL Regional Components (1-7)	1,790.2	1,133.7	1,054.1	3,978.0	4,734.0	5,036.0
<u>National Components</u>						
8. Malawi	719.9	545.1	545.0	1,810.0	2,154.0	2,292.0
9. Zambia	1,649.0	1,695.0	1,678.0	5,059.0	5,998.0	6,381.0
10. Zimbabwe	2,072.0	1,350.0	1,350.0	4,772.0	5,678.0	6,041.0
SUB-TOTAL Regional and national	6,231.1	4,723.8	4,654.1	15,690.0	-	-
GENERAL TOTAL (Including 15% price contingencies)	7,415.0	5,621.0	5,528.0	18,564.0	18,564.0	19,750.0
GENERAL TOTAL (000 ECU) (1 ECU = 0.94 Z\$)	7,889.0	5,980.0	5,881.0	19,750.0		

Environmental impact studies will be contracted to an internationally renowned institution. Technical Assistance, in view of its highly specialised nature, will be directly recruited in agreement with the relevant National Authorities.

3.6. Time Table

The estimated time schedule for the execution of the project is as follows, with all periods running from the date of the Financing Agreement.

- Engagement of Regional Coordinator and first meeting of Standing Committee - 2 months
- Start of research on application of odour baited traps and aerial spraying development - 4 months
- Engagement of T.A. and international invitation to tenders - 5 months
- Presentation and approval of national work programmes and cost estimates - 6 months
- Award of contracts for aerial spraying and supplies - 9 months
- Start of tsetse eradication, tsetse surveys and trypanosomiasis control - 10 months
- Completion of Phase I programme - 43 months

Tsetse eradication should start in June 1985, as it can only be implemented during the dry season and otherwise would delay the programme for a further year.

4. EXPECTED EFFECTS OF THE PROJECT

4.1. Physical Results

Tsetse eradication on 12,600 km² in North Eastern Zimbabwe will result in an increase of livestock numbers by 83,000 head of cattle to a total of 192,000. Present offtake rates will increase due to lesser mortality from 5% to at least 9%, thus resulting in additional annual sales of about 12,000 head. Cultivated crop areas will increase by 10,000 hectares and yields on existing and additional fields will improve. Thus allowing the population to secure their subsistence in most years despite the semi-arid character of the region.

Results of tsetse eradication in the Kariba Lake-shore Region of Zambia will be a considerable expansion of the existing cattle herd of 80,000 head to approximately 150,000 and an increase of its productivity.

It is also to be noted that both eradication measures implicitly and as a first result will have stopped further expansion of tsetse infestation in the areas concerned.

Further results of the programme will be up to date tsetse and trypanosomiasis distribution maps of Malawi, of Zambia's southern and eastern provinces as well as of Mozambique's western border areas with neighbouring states and of north-eastern Zimbabwe.

4.2. Financial Effects

Budgetary Effects

Progressive tsetse eradication within the Common Fly Belt will in the long term eliminate recurrent expenditure on Tsetse and Trypanosomiasis Control. In the medium term tsetse defence lines will shorten, and numbers of cattle under protective treatment decrease and with it proportionally recurrent expenditure. The amount of savings through a once over investment into global eradication is however not reflected by actual expenditure of Governments concerned as the present level of efforts is, in most cases, insufficient to avoid further expansion of fly infested zones. In the most pessimistic case that eradication would be halted beyond an area cleared and resulting in an equally long but dislocated defense line, budget savings would only consist of preventive cattle treatment. In the case of the proposed North Eastern Zimbabwe Phase I Eradication, preventive treatment of the potential cattle herd of 192,000 would cost about 800,000 Z\$ annually (drugs and their application) while Tsetse Survey and Eradication are costed at 6.3 million Z\$. Profitability of eradication from a budget point of view in this case is 13 per cent, not taking into account negative economic side effects of drug administration. Eradication in the Zambian Kariba Lake-shore Region leads to an important shortening of tsetse defence lines and will have a very positive (theoretical) budgetary effect.

Balance of Payment Effects

Project investment will replace recurrent foreign exchange costs on static tsetse and trypanosomiasis control (equipment, insecticides, trypanocidal drugs). Additional foreign currency earnings will come from increased meat export in the case of Zimbabwe and Zambia and from meat import substitution in Malawi and Mozambique. The study on Regional Tsetse eradication comes to the conclusion that effects are largely beneficial, even taking into account the development and running costs of additional infrastructure for livestock raising (dip tanks, water supplies) and not including savings on ongoing static operations.

4.3. Economic Effects

Most of the elements of the proposed project are preparatory for later large scale eradication programmes. They concern mainly research activities, tsetse distribution surveys and training for which it is difficult to make an isolated economic assessment. Viewed as an entity and under the hypothesis that a ten year eradication phase will follow after the preparatory phase and allow the eradication of tsetse and trypanosomiasis from the common fly belt, the internal rate of return of the entire programme is estimated in the basic study at 14 per cent. This calculation includes all the preparatory and

eradication costs. On the income side are counted reduced cattle losses and a gradual expansion of livestock (cattle) production in the tsetse liberated areas. Income is calculated net of connected investment into infrastructure and services as well as net of production costs. The internal rate of return does not include the important and positive effects on crop production through availability of draught power and manure and this should be considered in reality to be much higher. Also, savings on present tsetse control costs are not considered. An appraisal of an eradication programme on its own, based on the example of the Zimbabwe North-East Eradication project included in the preparatory phase, shows a financial internal rate of return of 32% compared to an economic internal rate of return of 46%.

4.4. Social Effects

The social effects of the proposed tsetse and trypanosomiasis control measures within the present project are an immediate reduction of the incidence of sleeping sickness in the Zambian project area, which is difficult to quantify, as well as the prevention of a further decline of capital and income through cattle losses also in Zimbabwe. In the medium term, with the increase of cattle numbers, increased income stability will be an important benefit both in terms of increased livestock capital, as well as increased self-sufficiency in food production.

4.5. Effects on the Environment

A research programme on the environmental impact of chemical tsetse eradication methods is envisaged within the preparatory phase based on results already obtained in this field through O.D.A. financed research, in Botswana (aerial spraying) and Zimbabwe (knapsack spraying). This will allow to adjust eradication methods where necessary. However, the envisaged replacement of ground spraying (DDT) by large scale aerial spraying (Endosulfan) reduces considerably the impact of chemical eradication on the environment. It is further assumed that the development and large scale application of tsetse trapping methods will prove technically and economically viable and thus replace chemical treatments by an environmentally "clean" method. Furthermore, the proposed additional large scale eradication measures in Zambia and Zimbabwe will give the ongoing Government programmes the necessary impetus for the "roll up the carpet" strategy dispensing with the obligation of holding permanent livestock and wildlife free buffer zones against tsetse re-invasion, which implied permanent destruction of wildlife in the buffer zones. Land use planning after tsetse eradication will be necessary after the preparatory phase only, as eradication in Phase I only concerns areas which were formerly reclaimed allowing the existing population to fully resume former agricultural and livestock production.

PROJECT NO: 2.8.1

ANNEX C

PROJECT TITLE: ANIMAL TRYPANOSOMIASIS: Regional Training Centre for Middle-Level Technicians in the Control of African Trypanosomiasis

SUMMARY

Project Duration: Thirty six months

Primary Function: Training

Secondary Function: Institution Building: Strengthening National Infrastructures and providing Technical Assistance

Government Cooperating Agencies: SADCC Ministries of Agriculture and Land Use Planning

Executing Agency: Government of the Republic of Zambia

Cost: US\$2 445 480

Estimated Starting Date: January 1, 1985

Introduction

At the 1974 World Food Conference it was decided that FAO should begin a continent-wide project to control African trypanosomiasis. One of the constraints to the successful implementation of such a programme was identified as the shortage of manpower. Consequently, it was decided to hold regular courses for middle level technical personnel.

Courses at the Zambia based training centre have been held annually since 1980 and last for six and a half months (from mid-May to November). The courses are for middle level technical personnel from English speaking countries. Up to 1983 forty students had passed through the Centre from twelve countries namely: Botswana, Zambia, Malawi, Mozambique, Tanzania, Kenya, Ethiopia, Somalia, Nigeria, Ghana, Liberia and Gambia.

The project has only trained a small number of people because of the inability of many candidates to obtain sponsorship and the difficulties involved in completing the necessary formalities in time. These problems have been raised with FAO which is aware of the situation.

SADCC, however, believes that these courses should continue because:

- i. trypanosomiasis continues to be a major constraint on rural development;
- ii. most countries in the region do not have adequately trained manpower;
- iii. a large scale eradication programme is about to be undertaken covering Zambia, Zimbabwe, Malawi and Mozambique and trained manpower will be essential for the success of this project. (1)

In April 1984 UNDP announced that the existing project on Animal Trypanosomiasis Control (UNDP/FAO RAF/75/001), under which this Centre

(1) See Project 2.8.2. at Annex B of this report.

was being funded, could not be continued after December 1984 since funds had not been allocated for its continuation. It is in this light that the project is being presented by SADCC for support and for funding.

Part I: BACKGROUND, JUSTIFICATION, ACTIVITIES AND INPUTS

A. Development Objective

The development objective to which this project relates is the overall improvement in the living conditions of the rural areas of the nine SADCC countries which are now infested by the tsetse fly.

Human and animal trypanosomiasis is a disease of rural populations: it is estimated that about 10 million people reside in endemic trypanosomiasis areas with some 10,000 cases of sleeping sickness recorded annually and that 20 million livestock are exposed to the disease.

The largest proportion of human population in SADCC countries lives in rural areas. Most people derive their livelihood in one way or another from agriculture.

Animal trypanosomiasis imposes serious constraints on the development of vast areas of rural Africa.

The project will assist in providing the trained manpower necessary to strengthen the specialised units responsible for planning and implementing control programmes of *Glossina* and trypanosomiasis and thus facilitate national efforts to control the disease and maintain the benefits of successful campaigns.

B. Immediate Objectives

Training

The immediate objectives of the project is to train personnel from these SADCC countries in the skills of tsetse and trypanosomiasis control so as to increase the number of national personnel who are capable of managing and implementing control activities.

Graduates from training courses will strengthen existing control services and facilitate organisation of others where none exists.

The effects of the training received will be multiplied through the training given by those graduates to other staff and persons living in the affected rural areas.

C. Justification

The Problem

1. General

1.1. The area infested by the various species of tsetse flies involves nine SADCC countries south of the Sahara comprising about 9 million Km². The trypanosomes they transmit cause sleeping sickness in man and trypanosomiasis in mammals.

1.2. Throughout these countries in tropical Africa in which it prevails trypanosomiasis causes more losses of livestock than does any

other disease. It kills or disables camels, horses, pigs, sheep and goats.

1.3. The tragedies which result from the hunger situation in these countries, their struggle to meet their people's needs, the rapid growth in their population, the steadily decreasing usable land/man ratio and the resulting increasing pressure for land and the consequences on the environments, have all been well documented in various publications.

1.4. But trypanosomiasis is a persistent, chronic disease: it poses severe constraints on the use of some 7 million km of land with adequate rainfall, high solar radiation, long growing seasons and fertile soils. Those areas that are affected by the disease are often unfit for human habitation and animals can often not be used for farming or as beasts of burden.

1.5. In resume: apart from the direct losses through human and live-stock mortality, animal trypanosomiasis also indirectly affects:

- human health:- through protein deficiencies caused by the shortage of meat and milk;

- livestock production:- trypanosomiasis prevents the introduction of improved breeds and also causes over-stocking in tsetse free areas consequently resulting in deterioration of rangelands.

- agricultural production:- through the lack of draught animals and manure;

- the rural economy:- by preventing integrated agriculture and livestock production and contributing to since some pastures are seasonally rendered unsafe because of fly advances;

- the national economy:- the deficit in animal production compels affected countries to import meat and dairy products.

1.6. To alleviate this dreadful situation, there is pressing concern in these countries to reclaim new land in order to relieve population pressure and to meet the increasing food demands by bringing more potential farmland into production and introducing livestock breeds for animal traction.

1.7. Thus there is now an increasing need to control tsetse as a means of controlling trypanosomiasis.

2. Manpower Requirements/Training

2.1. However in spite of the gravity and magnitude of the problem, few African countries on their own have the financial, technical and human resources needed to contain the problem.

One major technical constraint, which is invariably identified, is the general shortage of personnel appropriately trained in tsetse control at all levels.

2.2. An increasing number of young African graduates are now entering the trypanosomiasis research and control field but many more are required. A much bigger problem concerns the acute shortage

of middle-level technical personnel who should normally provide the backbone of a nation's tsetse control efforts.

Such personnel would strengthen the specialised units responsible for implementing control programme and thus stabilize national efforts to control the disease and maintain the benefits of successful campaigns.

- 2.3. Until recently, there were only two training centres in Africa which provided training courses on tsetse control for middle ranking technicians on a regional basis.

Currently, both of these centres are threatened with premature closure because the external financial support on which they so much depend for their existence is being withdrawn.

- 2.4. An existing project, the UNDP/FAO RAF/75/001, Animal Trypanosomiasis Control: Economic Assessment, Training and Applied Research on Glossina Control in the Dry Savannah Zones, Phase II, based in Lusaka, Zambia, operates as one of its activities, a facility which provides training for English speaking tsetse control personnel at the middle level.

It does so by offering every year training courses of 6½ months duration of which 4 months are spent in field camps.

Training covers a wide variety of subjects and techniques relevant to tsetse control, especially survey methods, ground spraying and aerial spraying as well as trypanosomiasis diagnosis, prophylaxis and treatment. Emphasis is on the practical aspects on the subject matter. This project is to be closed down by UNDP by end of December, 1984.

- 2.5. In April 1982, shrinking UNDP resources led to the termination by that agency of financial support for RAF/75/001 Phase I.

At that time, FAO's Technical Cooperation Programme provided the sum of US \$115 000 as hiatus funding to continue the training component of the project (then designated as TCP/RAF/2201T) till UNDP resumed its support in January 1983.

These actions were taken to ensure continuity of training for middle-level control personnel, continued occupation of the Lutale field training centre and to obviate termination of the services of very experienced personnel employed under project RAF/75/001 which would have been a severe setback to implementation of the overall Programme for the control of African animal trypanosomiasis and related development.

- 2.6. Trainees have come from Botswana (3), Ethiopia (2), Gambia (4), Ghana (3), Tanzania (5), Kenya (2), Liberia (3), Malawi (2), Mozambique (1), Nigeria (2), Somalia (2), Zambia (11), making a total of 40 trainees who have successfully completed the annual courses offered since 1980.

- 2.7. However, whereas this project has only trained 40 technicians in four training courses, a similar training course, for francophone students sponsored through French and German Technical assistance trained over 120 middle-level technicians in six training courses between 1976-1982 held at the Ecole de lutte anti-tsetse (ELAT), Upper Volta.

The relatively small output of graduate trainees from RAF/75/001 is largely due to the fact that, whereas acceptance of candidates at ELAT was facilitated by sponsorship being at the disposal of the project itself, those governments that wished to send their nominees to the RAF/75/001 training course have been required to provide financial support from their own resources, or from donors by request. These requests can take several months to process.

- 2.8. RAF/75/001 does not contain a fellowship component since UNDP intended that such fellowship should be borne by the trainers' national governments. Unfortunately, many African governments in the face of current global recessions, have not been able to fulfill this condition.

Thus, despite the favourable responses from the Governments concerned to the invitation to send nominees, only a small percentage of the nominees succeeded in obtaining external sponsorship and attending the courses.

Furthermore, the international training staff participates in other training activities on trypanosomiasis control, e.g:

- Assistance in the training of 30 - 40 post-graduate leadership level personnel in a variety of tsetse and trypanosomiasis control techniques and strategies with special emphasis on planning and evaluation of control programmes through Training Seminars;
- assistance in running refresher courses in specialised topics in tsetse control methodologies at the leadership level;
- designing training material for tsetse control personnel appropriate to SADCC countries.

D. Activities

It is strongly recommended that training programmes be organised along the same lines as those of the UNDP course which comes to an end at December 1984.

<u>Project Activities</u>	<u>Location</u>	<u>Starting Date and Duration</u>
<u>Training</u>		
Preparation of training material, prospectus, syllabuses and curricular	Zambia and elsewhere	Jan-April 1985
Preparation of training material, for SADCC group	Zambia and elsewhere	Continuous
Conduct training courses of 6.5-7 months duration for 15-20 middle-level technical personnel	Zambia	May-Dec. 1985 May-Dec. 1986 May-Dec. 1987

<u>Project Activities</u>	<u>Location</u>	<u>Starting Date and Duration</u>
Assist with training of graduate leadership personnel through training seminar and field runs organised by international donor organisations.	Open	October 1985
Postgraduate training course organised by donor international organisations.	Zambia	?
Postgraduate training course organised by donor international organisations.	Zambia	?
Assistance to national training courses in collaboration with appropriate animal health officer.	Open	Continuous
Assistance to tsetse research and control personnel.	Zambia	Open
<u>Technical Assistance</u>		
Assistance to specialised courses on tsetse control methodologies at the leadership level.	Zambia	Open
Follow-up visits of project staff, consultants or appropriate Animal Health Officer, to assist graduates in planning for a successful implementation of skills acquired during training.	Open	Continuous
Project Evaluation Mission	Zambia	August-Sept. 1986
Preparation of final report	Zambia	August - Dec. 1987

E. Inputs

1. Participating Governments Inputs for the Project Activities

- 1.1. The Government of the Republic of Zambia will provide housing for the project staff, classrooms, officers, stores, a plot of land (for the field station) and training assistance during practical training in the field.
- 1.2. The governments of the countries to which follow-up visits are made, would be required to assist with:
 - contacts with government officials concerned;
 - documents and information needed;
 - local transportation.
- 1.3. All participating governments should collaborate in every possible way to nominate and sponsor trainees. The trainees

are expected to be either already actively engaged, or on completion of their studies to be employed in their tsetse and trypanosomiasis control units.

- 1.4. National governments are expected to establish national tsetse and trypanosomiasis control units and to nominate a government department to serve as national focal point to ensure co-ordination and collaboration of all appropriate ministries for control activities and rural development.

This national focal point will also be responsible for liaison with governments of SABC, international organisations and institutions, bilateral and multi-lateral funding agencies and will ensure government collaboration with Development Support Units where and when these have been established.

2. Inputs for the Project Activities

<u>I. Assignment of Staff</u>	<u>Location</u>	<u>Starting Date and Duration</u>	<u>Total</u>
a) Team Leader/Training Specialist. A specialist in all aspects of tsetse biology and control, with training experience as well as good knowledge of other aspects of animal trypanosomiasis.	Zambia	1 January, 1985 36 m/m (P5)	36648
b) Tsetse Entomologists/ Training Specialist. A specialist with practical experience in all aspects of tsetse biology and control.	Zambia	1 January, 1985 36 m/m	211920
c) Consultants:			
1) Specialists in the economic aspects and related development of tsetse control as well as planning and setting up of national tsetse control services	As required	15 m/m	60 000
2) Project evaluation mission	As required	Aug-Sept. 1986 m/m	15 000
d) 1 Associate Expert, Veterinarian, to assist project staff in teaching and research on animal trypanosomiasis	Zambia	1 January 1985 36 m/m	
e) 1 Associate Expert to assist project staff in teaching and research on environmental aspects of tsetse control	Zambia	1 January, 1985 36 m/m	

II. Administrative Support Staff

	<u>Location</u>	<u>Starting Date and Duration</u>	<u>Total</u>
2 typists/clerks	Zambia	1 January, 1985 78 m/m	22 500
1 driver	Zambia	1 January, 1985 36 m/m	8 500
3 watchmen:Office - camp	Zambia	1 January, 19.. 108 m/m	22 900
1 labourer, camp	Zambia	1 January, 19.. 21 m/m	3 000

III. Training

A. Fellowships 30 per year for 3 years plus external travel

B. Duty Travel

Follow-up visits of project staff and assistance by same to national training activities related to tsetse and trypanosomiasis control

Open Open
 Continuous

IV. Supplies and Equipment

	<u>Location</u>	<u>Delivery Date</u>	<u>Cost in US \$</u>
a) Expendable supplies and equipment	Zambia		25 000
training requirements	Zambia		2 000
office supplies	Zambia		3 000
sundries documentation	Zambia		2 500
b) Non-expendable equipment four wheel drive vehicle Liaison	Zambia		13 000
cars (two) Minibuses	Zambia		18 000
(two) Training and laboratory equipment	Zambia		20 000
camping requirements	Rome		20 000
(tents, generators, etc.)	Zambia		35 000
2 - ton lorry/vanette	Zambia		10 000
c) Miscellaneous vehicle maintenance, fuel etc.	Zambia		90 000
Reports and other technical documents	Zambia and elsewhere		8 000
Sundry	Zambia		6 000
			<u>1,445 480</u>

Preparation of Work Plan

A detailed work plan for implementation of the project will be prepared by the Training Specialist/Project Manager in consultation with appropriate officials. This will be done at the start of the project.

F. Preparation of the Framework for Effective Participation of National and International Staff in the Project

Efforts will be made, with the co-operation of participating governments to identify qualified national of such countries, to work within the project on a counterpart basis, with a view to their taking over the functions of the experts in due course. This should help to make the training institution a viable one even after the termination of the project.

G. Institutional Framework

The project will work in close co-operation with the appropriate Veterinary and Tsetse Control Department of the Governments of SADCC countries. A Governing Board will be set up to meet annually to review project progress, the Board to be composed of nominees, one from each of the Governments of Malawi, Mozambique, Zambia and Zimbabwe. These countries are suggested because they face the biggest tsetse challenge.

Project Area

In delineating the project area, the following criteria were taken into consideration:

- the requirements of the Programme for the Control of African Animal Trypanosomiasis and Related Development, with attention to be focussed on the dry savannah Zones of SADCC countries;
- the patterns of tsetse species distribution in eastern, central and southern Africa, covering nine SADCC countries;
- the training component of the project would be of interest to all tsetse-infested countries that can provide trainees proficient in written and spoken English.

Project Location

The project headquarters will be located in Lusaka with a field training facility at Lutale, Mumbwa District, Zambia.

The benefits to be derived from location of the training unit in Zambia are:

- existing premises made available to the original RAF/75/001 project by the Government of Zambia;
- existing project training facilities at Lutale, Mumbwa District;
- existing housing for some international staff;
- establishment of collaborative and coordinative links with the Department of Veterinary and Tsetse Control Services, National

Council for Scientific Research, Scientific Research, Zambia Institute of Animal Health, Central Veterinary Research Laboratories and specialized departments (National Parks and Wildlife and Fisheries).

The project will also liaise closely with a number of other institutions concerned with tsetse and trypanosomiasis control.

Prior Obligations and Prerequisites

Donor organisations will be approached by SALCC as possible sources of funding for a blanket fellowship scheme.

Future Assistance

Future assistance cannot, at this stage, be defined although it is envisaged that assistance will be required to support a continuation of the project complementary to the effective implementation of the Programme for the control of African Animal Trypanosomiasis and Related Development. Accordingly, the type and amount of future assistance will be determined at a later stage based upon evaluation of the project during the final phase of project implementation.

PART II SCHEDULE OF MONITORING, EVALUATION AND REPORTS

A. Monitoring Reviews and Technical Reviews

The project will be subject to periodic review in accordance with the policies and procedures established for monitoring project and programme implementation, under leadership Board of Governors.

At the discretion of the Executing Agency, project technical assistance and training policies and activities will be subject to special technical reviews.

B. Evaluation

The project will be subject to evaluation, in accordance with the policies and procedures established for this purpose. The organisation, terms of reference and timing of the evaluation will be decided by consultation between Board of Directors and the Executing Agency.

C. Progress and Terminal Reports

Project progress reports will be prepared every six months by the Project Manager and submitted to Governments according to procedures.

A Terminal Report will be prepared by the Executing Agency informing the Governments on the extent to which the project's scheduled activities have been carried out, its outputs produced, its immediate objectives achieved and recommendation for project follow-up.

A first draft of the report will be prepared by the Project Manager with the assistance of the Entomologist, four months before the end of the report, to be followed by the Agency's formal submission of the definitive version at the project's completion.

PROJECT NO: 2.4.4

ANNEX D

PROJECT TITLE: RINDERPEST CONTROL - NORTHERN MALAWI/NORTHERN ZAMBIA

SUMMARY

Following the outbreaks of Rinderpest in Western, Northern Africa and Tanzania, Malawi and Zambia undertook preventative measures to vaccinate cattle in their northern borders. The programmes started in 1983 in the two countries and are going to continue for another three (3) years. The total project cost is K1,303,398 over the four years covering 23,000 cattle each year.

The project objectives are those for the prevention of the disease in livestock, including its continued monitoring, training of personnel and the establishment of diagnostic facilities.

The project will be run in two countries, that is, Malawi and in Zambia and the financial requirements are given below:-

North Zambia's Financial Request in Kwacha

Year	1983/84 1	1984/85 2	1985/86 3	1986/87 4	Total
Capital	247 000	-	-	-	247 000
Running Costs	161 000	193 600	211 200	228 800	794 600
Total	408 000	193 600	211 200	228 800	1 041 600

North Malawi's Financial Request in Kwacha

Year	1983/84 1	1984/85 2	1985/86 3	1986/87 4	Total
Plant	19 600	-	-	-	19 600
Equipment	30 665	-	-	-	30 665
Running Costs	35 740	39 114	43 245	47 569	165 668
Total Kwacha	86 005	39 114	43 245	47 569	215 933
Grand Total (K)	494 005	232 714	254 445	276 369	1 257 533
Zambia/Malawi					

Section One: Rinderpest Vaccination and Control Programme, Northern Malawi

Responsible Ministry: Ministry of Agriculture

1. Objectives

The objectives of the project are to annually vaccinate cattle within Karonga, Chitipa and Pumphi Districts against Rinderpest and to strengthen disease surveillance patrols along the border zones.

2. Goals of the Project

The function of the vaccination campaigns will be to create an immune barrier of cattle along Malawi's northern borders to prevent southward spread of Rinderpest from its present foci in Tanzania. The strengthened disease surveillance patrols will provide an early warning system to detect an impending outbreak and deter cross border movement of potentially infected animals.

3. Project Life

The project will require funding for an initial period of 4 years to sustain protection during the course of the current outbreak that is approaching our northern borders.

4. Project Finance

Total Project Funds, K216,133

5. Financial Summary

(a) Funds Required *

<u>Category</u>	<u>1983/84</u>	<u>1984/85</u>	<u>1985/86</u>	<u>1986/87</u>	<u>Total</u>
(006) Plant & vehicle	19,600	-	-	-	19,600
(007) Other equipment [†]	30,665	-	-	-	30,665
(008) Running expenses	35,740	39,114	43,245	47,569	165,668
<u>Total Project Cost</u>	<u>K86,005</u>	<u>39,114</u>	<u>43,245</u>	<u>47,569</u>	<u>215,933</u>

6. Project Targets

- (i) The Department of Veterinary Services is responsible for the design and implementation of animal health programmes in Malawi. The project will provide the department with the means of discharging this function effectively in preventing a Rinderpest outbreak.

The project's specific role will be to finance the purchase of vaccine and equipment required for mounting annual field campaigns.

It is intended that full use will be made of existing staff and cattle handling facilities within the three districts.

(ii) Phasing

The first year of the project will involve capital expenditure for the required equipment and running costs for the first campaign. In the subsequent 3 years the project will provide the running costs for the re-vaccination campaigns.

* Financial details are appended and can be found at the end of the project.

(iii) Expected Qualities and Quantities of Output

A successful vaccination campaign requires the following ingredients:

Trained staff, co-operative livestock owners, cattle handling facilities, sufficient vaccine, adequate refrigeration, cold chain to crush site, transport, robust syringes and correct size needles.

The project will make good the district's current deficiencies by providing vaccine, one large paraffin refrigerator for each district (4), a total of 2 large electric refrigerators to facilitate vaccine storage at district offices, 6 medium sized paraffin refrigerators will be purchased for vaccine storage at district sub-centres. 3 small 12 volt powered refrigerators will be purchased, one for each district, to enable vaccine and/or cold packs to be carried to vaccination crushes remote from sub-centres.

Insulated chests and flasks will be purchased to hold vaccine at crush sites during vaccination.

One landrover is required for supervision and portorage of equipment, with 3 motorcycles resident, one per district, for purposes of communication and supervision of border patrols. Automatic syringes and appropriate size needles will also be purchased for vaccination of cattle, minimising operator fatigue and stock stress.

Vaccinations will be conducted at established crush sites following a sequential programme by trained staff under supervision of District Officers. Livestock owners will be informed of vaccination dates through the existing channels of Veterinary field staff and their full co-operation can be anticipated on past experience with Foot and Mouth disease and Blackwater campaigns. A follow up campaign to vaccinate absentees will routinely be conducted by the respective field staff.

Vaccination programmes will commence each year in the dry season as road conditions permit. Within the months of June and July it is anticipated that 15,000 cattle within the 3 districts will have been vaccinated.

7. Background Information

Malawi's last experience of Rinderpest occurred during the infamous, panzootic that swept through Africa at the end of the last century. Subsequent to that time there have been two epizootics (in 1913-14) originating from East Africa that have threatened our northern borders. Effective control measures comprising cattle immunisation and game destruction were formulated and implemented along a line between Northern Zambia and Lake Malawi, which prevented any further southward spread.

Human settlement and land clearance have now largely displaced game in Malawi's northern reaches. Vaccination of domestic livestock along will now be sufficient to prevent the disease progressing through the country.

From 1969 to date there has been an annual campaign to vaccinate cattle along the Northern Border zone with Foot and Mouth disease vaccine.

The experience gained from this established exercise will ensure that the project's support is effectively utilised.

8. Success so far Achieved

The Department of Veterinary Services has a well earned reputation for conducting effective disease control measures. The geography of the country and the co-operation of its peoples greatly assist the department in this task.

Since 1957 there have been 8 outbreaks of Foot and Mouth disease in the border zone. All the outbreaks derived from Tanzania. In each case the disease was contained within the control area and subsequently eliminated. In 1977 there was a serious outbreak of Blackwater disease affecting cattle within Karonga district with more than 200 recorded deaths in one area alone. A survey of the area determined the infected areas and a vaccination regime was adopted. In the following year only one case of Blackwater was detected in the whole district.

In pursuance of the national policy to control tick born diseases the department has constructed and operated dip tanks. To date there are 43 dip tanks in Karonga/Chitipa district providing a weekly dip service for more than 85% of the cattle population.

In the face of the oncoming threat of Rinderpest the department is committed and prepared to mount the appropriate control measures necessary to prevent the disease spreading through the country.

9. Execution and Supervision

The overall supervision of the project will be vested in the Chief Veterinary Officer. The Districts Veterinary Officers will be responsible for the day to day activities of the vaccination teams and border patrols. The districts' programmes will be co-ordinated by the Divisional Veterinary Offices.

Section Two: Rinderpest Control, Zambia

Background

Rinderpest passed through Zambia from the north in 1896. Since then, there has been no case of this disease. In 1896 the disease killed a lot of cattle and wildlife on its way down to Southern Africa. Because of the seriousness of the disease, Zambia has always been on the lookout for this disease. Following the reported cases in Tanzania in 1981 - 82, Zambia stepped up its alertness to the disease which led to a decision in 1983 for the country to vaccinate its cattle in its frontier province with Tanzania and to sample its wildlife to find out if there was any trace of the disease among wildlife.

Objectives

The objectives for the project would be as follows:-

- (a) to create a cattle immune barrier against Rinderpest between northern Tanzania and the rest of Zambia and the Southern states;
- (b) to monitor the Rinderpest situation in the northern province of the country with a view to detect the disease very quickly, if it did occur near the borders;
- (c) to monitor wildlife in regards to the Rinderpest situation in northern Zambia, with a view to taking early preventative measures, and
- (d) to co-operate with Tanzania, and Malawi to see that the common area of operation was kept free of the disease and set up a monitoring programme.

The programme would involve the following:-

- (a) setting up of a monitoring programme in Zambia to encompass both wildlife and domestic stock;
- (b) vaccination of cattle in the Northern Province which has a cattle population of approximately 80,000;
- (c) setting up laboratory facilities for the future local and early diagnosis of the disease;
- (d) the training of local personnel both at professional and technical levels, to handle any Rinderpest control aspect; and
- (e) to co-operate with neighboring countries and international organisations in the control of the disease.

Project Duration

The project is to be divided into 2 phases i.e. the immediate phase (1) and the long term (2).

Immediate Phase

This will last for 2 years and has already started and is consisting of:-

- (a) an inspection of our northern border for the presence, or otherwise, of the disease in livestock and wildlife. The results so far are negative;
- (b) vaccination and identification of all cattle in the Northern Province. This has started in 1983. In both vaccinations, anti-body profiles will be done to monitor the effectiveness of the vaccinations;
- (c) after the 2 years, the situation will be reviewed especially in respect to the disease situation in Tanzania and beyond. If the situation is not satisfactory the vaccination programme will continue into 3rd and 4th years, but vaccinating young stock only that time.
- (d) the training of local personnel has started by training a veterinary officer in virology with eventual specialisation in Rinderpest Control.

Organisational Set Up

The following is the set up:-

- (a) There is the Field Co-ordinator, a Senior Veterinary Officer,
- (b) There are 6 vaccinating teams consisting of 10 people per team headed by a Senior Livestock Officer.
- (c) Operations started from the border working inwards.

Equipment

(a) Transport

- (i) 1 lorry, (ii) 7 Land Rovers, and (iii) 10 Bicycles.

(b) Communications

- (i) 2 radios for field radio link with headquarters.

(c) Cold Chain

- (i) Cold Room facilities at field base camp
- (ii) 1 deep freeze - 20°C
- (iii) 4 fridges
- (iv) 16 portable field fridges
- (v) 20 cold boxes, and
- (vi) Ice packs

(d) Syringes and other instruments

- (i) 20 automatic syringes
- (ii) needles
- (iii) sterilising pots
- (iv) lubricants, and
- (v) notching instruments for ear punching

(e) Other Items

- (i) Protective clothing
- (ii) Stationery for records
- (iii) Camping equipment, and
- (iv) Serum sampling equipment for both wildlife and cattle

Project Cost

(a) Capital Costs

	<u>K</u>
1 Lorry at K50,000	50,000
7 Land Rovers at K20,000	140,000
Cold Chain	30,000
Instruments	5,000
Camping Equipment	10,000
Communication Radios	10,000
Other misc. items	2,000
	<hr/>
Sub Total	247,000
	<hr/> <hr/>

(b) Running Costs per 6 months per year

	<u>K</u>
Salaries (70 men)	50,000
Per diem at K150 per man per month	63,000
Fuel for 8 vehicles	32,000
Contingencies	16,000
	<hr/>
Sub total	161,000
	<hr/>
Grand Total	408,000
	<hr/> <hr/>

(c) Financial Outlay

Year	1983/84 1	1984/85 2	1985/86 3	1986/87 4	Total
Capital	247,000	-	-	-	247,000
Running costs	161,000	193,600	211,200	228,800	794,600
	<hr/>				
Total	408,000	193,600	211,200	228,800	1,041,600
	<hr/>				

Project Justification:

- (a) The cattle population of Zambia is over 2,000,000 valued at K500,000,000. This wealth has to be safeguarded.
- (b) The livestock wealth in the SADCC region, must be in the region of billions of dollars. This has to be safeguarded as well by preventing the disease coming down south.
- (c) There is, of course, the international animal wealth to be safeguarded as well.

Cost Benefits

In terms of the Zambia cattle wealth alone of K500,000,000 it can be seen that the K423,000 spent on preventative measures per year is negligible compared to the risk of not vaccinating.

Phase 2

this phase is a long term programme consisting mainly of:-

- (a) Monitoring the border;
- (c) Monitoring the wildlife situation;
- (c) Consolidation of the laboratory diagnostic facilities and
- (d) A national core of trained personnel.

PROJECT TITLE: RINDERPEST VACCINATION AND CONTROL PROGRAMME, NORTHERN MALAWI

Responsible Ministry: Ministry of Agriculture

1. Project Officer: Chief Veterinary Officer

2. Financial Details

Details of Expenditure	Notes	Unit Cost	1983/4	1984/5	1985/6	1986/7	Total /4 years
Donor Funds							
(006) Vehicles							
1 x 4WD Pick/Up	(i)	16,000	16,000	-	-	-	16,000
3 x 100cc M/C	(ii)	1,200	3,600	-	-	-	3,600
(007) Equipment							
3 x Paraffin refrigerators (large)	(iii)	1,200	3,600	-	-	-	3,600
6 x Paraffin refrigerators (medium)	(iv)	800	4,800	-	-	-	4,800
2 x Electric refrigerators (large)	(v)	1,200	2,400	-	-	-	2,400
3 x electric refrigerators (12v portable)	(vi)	800	2,400	-	-	-	2,400
9 x Insulated chests	(vii)	120	1,080	-	-	-	1,080
18 x Insulated flasks	(viii)	30	540	-	-	-	540
30 x Automatic syringes	(ix)	120	3,600	-	-	-	3,600
1,500 x 16 gauge 3/4 Luer Needles	(x)	.05	75	-	-	-	75
2 x Electric sterilisers	(xi)	250	500	-	-	-	500
12 x Pot sterilisers	(xii)	20	240	-	-	-	240
9 x Rucksacks	(xiii)	60	540	-	-	-	540
18 x Haversacks	(xiv)	25	450	-	-	-	450
36 x Leather boots	(xv)	22	792	-	-	-	792
36 x Overalls	(xvi)	10	360	-	-	-	360
30 x Dustcoats	(xvii)	8	288	-	-	-	288
6 x Bell tents	(xviii)	1,500	9,000	-	-	-	9,000
			30,665	-	-	-	30,665

Notes on Expenditure

- (i) 1 4WD pick up preferable Landrover for overall project supervision
- (ii) 1 Motorcycle for each of the 3 districts for district supervision
- (iii) 1 per district
- (iv) 2 per district
- (v) 1 per district
- (vi) 1 per district
- (vii) 3 per district
- (viii) 6 per district
- (ix) 10 per district
- (x) 500 per district
- (xi) 1 per Karonga and Rumphi district
- (xii) 4 per district
- (xiii) 3 per district
- (xiv) 6 per district
- (xv - xvii) 12 per district for vaccination teams
- (xviii) 2 per district for vaccination teams

	1982/84	1984/85	1985/86	1986/87	Total
(008) Running Expenses					
Vehicle fuel and maintenance	12,000	13,000	14,520	15,972	55,492
Motorcycle fuel and maintenance	4,740	5,214	5,735	6,308	21,997
Refrigerator fuel and maintenance	3,000	3,300	3,630	3,993	13,923
Equipment maintenance	1,000	1,100	1,210	1,331	4,641
150,000 does vaccine	15,000	16,500	18,150	19,965	69,615
	<u>35,740</u>	<u>39,114</u>	<u>43,245</u>	<u>47,569</u>	<u>165,668</u>
Total Present Funds	K 86,005	39,114	43,245	47,569	215,933

PROJECT NO: 2.3.1.

ANNEX E

PROJECT TITLE: PRODUCTION OF INACTIVATED RABIES VACCINE

I Location Maseru, Lesotho

II Objectives

1. To provide appropriate facilities for the production of inactivated rabies vaccine at the Animal Disease Laboratory in Maseru.
2. To produce rabies vaccine in Lesotho in desired quantities which will make it possible for the disease to be brought under control within both the animal and human populations with a surplus for export to affected SADCC's Member States.

III Background and Justification

Unlike the rest of Africa, Lesotho has always been rabies-free. However, in 1982 rabies was introduced to Lesotho for the first time, having spread inexorably across the Orange Free State of the Republic of South Africa. The disease continued to spread, and in 1983 it reached the Maluti Mountains. At least 500 cases have so far been confirmed in dogs, cattle, horses, sheep and human beings in Lesotho.

The animal population in Lesotho is high and plays a significant role in the economy of the country. The owners are in general poor and cannot afford to pay for anti-rabies vaccination.

Under these circumstances the Government of Lesotho (GOL) finds itself in a position whereby, in order to bring this fatal disease under control, it has to go into the production of inactivated rabies vaccine which will be administered at very affordable rates to the farmers. Currently the vaccine is imported (on a rather limited scale for that matter) at very high prices and if fees to meet such costs are charged to the farmers animals will naturally be concealed and not brought forward for vaccination and this will only make matters worse. The GOL thus requests assistance in the provision of the urgently needed facilities for the production of rabies at the Animal Disease Laboratory, Maseru.

It is intended to produce 100,000 to 1,000,000 doses of the vaccine per annum and aware that a number of the Member States are affected by this disease, part of the production could be exported to interested Member States.

The project calls for technical assistance with the necessary supporting facilities while the GOL will provide the necessary counterpart staffing requirements as well as ancilliary counterpart facilities.

IV Project Description

The project will facilitate the extension of the existing Animal Disease Laboratory: a new wing will be constructed specifically for the production of rabies vaccine. The laboratory space will

include one dark room and one walk-in cold room for storage of vaccine. All necessary laboratory facilities will be provided and a new animal isolation unit constructed adjacent to the new building. Counterpart staff training will be financed under this proposal. Meanwhile, the expert being sought will be mainly involved in the following activities:

- Assist in the production of inactivated rabies vaccine on cell culture. The vaccine should be of a high degree of potency and conform to the WHO standards.
- Train National staff in methods of preparation and testing of rabies vaccine, and in methods of diagnosing the disease with special reference to Fluorescent Rabies Antibody (FRA) test.

V. Donor Inputs

- An Animal Disease Officer for one year, who must have experience in the preparation and testing of inactivated rabies vaccine produced on cell culture.
- Some supplies and equipment as shown in Appendix 1.
- Counterpart training.

VI. Counterpart Contribution and Supporting Arrangements

The Government will provide the necessary facilities required for the successful implementation of the project such as counterpart staff, some non-expendable, and expendable equipment as well as laboratory animals.

VII. Cost Estimates

The project is estimated to cost M288,472 to be financed jointly by the Government and the donor (as shown in Appendix I).

FINANCIAL BREAKDOWN

A. <u>Donor</u>	<u>M</u>
Personnel	120,000
Duty Travel	7,000
General Operating Expenses	4,000
Extension to Animal Disease Laboratory	35,000
Laboratory Supplies (glassware, media, chemicals, sera, antigens, rubber stoppers, aluminium seals)	4,000
Vehicle (V.W. Golf GTII 4 door)	12,735
Autoclave	18,000
2 x Deep Freezer - 700	14,000
Inverted Microscope	4,000
Fluorescent microscope	14,000
Deionizer	4,000
Crimpers and Decapper	2,000
Warning Blender	1,000
Vacuum tester	1,000
Training of Counterpart staff	8,000
 SUB-TOTAL	 <hr/> 248,735
 B. <u>Government of Lesotho</u> ¹	
Isolation Unit (Construction)	10,000
Fixed Equipment (for cold room and dark room)	7,000
Cages	3,000
Laboratory animals and food supplies	6,000
 SUB-TOTAL	 <hr/> 26,000
Miscellaneous ²	13,737
 GRAND TOTAL	 <hr/> <hr/> <hr/> 288,472

¹ GOL contribution will also be in the form of the necessary counterpart staff.

² Calculated as 5% of the total project cost (of 274,735).

AGRICULTURAL RESEARCH

INTRODUCTION

Within SADCC Agricultural Research is coordinated by Botswana which also chairs the relevant regional Consultative Technical Committee (CTC) convened by Zimbabwe.

Four agricultural research projects have been approved by the SADCC Council of Ministers and were submitted to the Lusaka Conference. Documentation on the four projects, which are summarised below, can be found in the Food and Agriculture papers prepared for the Lusaka Conference. Detailed planning of the implementation of these projects is, in certain cases, still under way. The CTC for Agricultural Research will be meeting in Harare in October 1984 and will be reviewing progress in all these projects. It is anticipated that more complete documentation relating to certain of the projects will be available at the Mbabane Conference.

1. Summary of Projects

Project 1 - Improved Land and Water Management Research Project

This project has the following objectives:

- (a) Obtain a better description of the natural resources and those factors (particularly the technical ones), which directly or indirectly influence agricultural production in the region; with emphasis on the 400 - 600 mm rainfall zone.
- (b) Conduct hydrological studies at farm and catchment level manipulating rain water and other manageable components of the hydrological cycle for optimum water utilisation for crop, range and animal production for a series of soils and land forms;
- (c) Develop cropping systems which not only use water efficiently but which display high yield stability indices, and which will help to optimise the combined benefits arising from animal and crop production;
- (d) Make and test models animal production systems and assess the appropriateness of alternative systems at selected locations; within a macro-catchment concept.
- (e) Collaborate with existing farming systems research projects in SADCC countries and thus integrate the technical-physical research objectives and findings of this water management project with the wider perspective of the farming systems approach.

The project, which will be initially based in Botswana, will be implemented in close collaboration with Lesotho which is responsible, within SADCC, for Soil and Water Conservation and Land Utilisation. Initial documentation for this project appears on page 85 of the Lusaka papers. The proposal has entered its final stage of professional planning, the UK taking the lead in the preparation of the final project documentation. The project document will be ready for submission to, and consideration by the CTC for Agricultural Research at its meeting to be held in Harare during October 1984. After the CTC for Agricultural Research has made its final recommendations, negotiations with donors will be initiated. To date ~~on~~ a donor, the UK, has indicated

a willingness to be involved in funding the implementation of this project. As can be seen from the indicated budget it is estimated that the project will cost some US\$11 million.

Project 2 - Regional Sorghum and Millet Programme

This project which is being implemented and administered with technical assistance from the International Centre for Research In Agriculture in the Semi-Arid Tropics (ICRISAT), commenced during June 1984. The objectives of the project are:

- (a) To improve sorghum and millet for farmer use in areas suitable for these crops;
- (b) To strengthen national programmes research capability in sorghum and millets through training of research and technical staff and through cooperative and collaborative research activities with ICRISAT and other organisations engaged in similar work;
- (c) To help national programmes develop farming systems suitable for sorghum and millet production.

The headquarters for the project are located in Matopos/Bulawayo, Zimbabwe with field work taking place in other Member States as well. Background information on this project can be found on page 93 of the Lusaka papers.

In line with the recommendation of the CTC for Agricultural Research, this project will be broadened to cover: grading and milling; variety screening and seed multiplication. Furthermore early attention will be given to sorghum and millet improvement in Zambia.

In the final preparation of the project considerable efforts were put into enhancing its regional nature and impact. Each of the senior project staff is under an obligation to spend 50 days per year in SADC countries other than the host country. Furthermore the Chairman of the Research CTC has requested that the project submit annual reports to the CTC in addition to reporting to the host country. These reports will allow the CTC to maintain a continuous assessment of the development of the project.

The bulk of the funding for this project has been secured and the first staff member arrived in Bulawayo during June 1984. A project agreement has been signed between Zimbabwe, ICRISAT and USAID to cover US\$14.8 million of the US\$16.4 million which is required. Additional donor support is required to cover the shortfall of US\$2.6 million. The German Federal Republic and CIDA have been approached to make good this shortfall though no definitive commitment has been made.

Project 3 - Grain Legume Improvement Programme

This project will be implemented with technical assistance from ICRISAT, International Institute for Tropical Agriculture (IITA) and the International Centre for Tropical Agriculture (CIAT). A feasibility study requested by the CTC (Agricultural Research), was carried out, with the financial assistance of CDA *, by an international group of consultants during the period November 1983 to July 1984

* Cooperation for Development in Africa (CDA) = UK, USA, France, Italy, Belgium, Canada and Federal Republic of Germany.

The feasibility study which will be reviewed by CTC (Agricultural Research) during October 1984, selected three crops to be included initially in the programme; namely, field beans, cowpeas and groundnuts. The objectives of the Project are to (1) increase production and reduce periodic shortages caused by low yielding varieties, diseases, insects and drought and (2) strengthen national research programmes through collaborative research, the training of national scientists and support personnel, and the provision of financial support where necessary. The administrative staff of the programme together with the research component dealing with groundnuts will be based in Malawi. Various alternatives for location of other research teams dealing with field beans and cowpeas have been proposed by the feasibility study, and the CTC (Agricultural Research) will make the final decision on location of these teams as well as reviewing the proposed programme. Donor support will be sought once the programme has been reviewed.

The estimated cost of the project ranges from some US\$14 million to US\$16 million.

A summary of the feasibility study is attached to this report.

Project 4 - Southern Africa Centre for Cooperation in Agricultural Research

The Maseru Council of Ministers approved a proposal that a study be undertaken to examine and advise on the need for and interest in the establishment of such a centre. This study has been completed, with assistance from USAID, and thus the professional planning stage of the project has been completed. Extracts from this study appear on page 99 of the Lusaka papers. The centre will be based in Botswana and located at Sebele, the Headquarters of the Department of Agricultural Research.

The CTC for Agricultural Research made its final recommendations on the basis of this memorandum at their meeting in early November 1983.

As can be seen from the estimated budget the project costs are US\$5 million for a five year period. One donor, USAID, has indicated that US\$1.5 million have been set aside to support this project. Italy and Canadian CIDA have also been approached to support the programme. The Interim Director, Professor H. Stepler has arrived and will be in post for an eight month period funded by the International Development Research Centre (IDRC). Swedish Aid for Research Cooperation for Developing Countries (SAREC) have agreed to fund a small Grants component of the Programme.

2. Other Activities Related to Cooperation in the Field of Agricultural Research

- A. SADCC established a joint CTC/CDA Committee for the assessment of the research capability of the SADCC countries. The committee selected three countries, Botswana, Malawi and Swaziland for pilot studies. A draft report based on these studies was presented at the SADCC Research Conference held in Gaborone during February 1984 (see below).

During July and August 1984, DEVRES/CDA undertook an assessment of the research capabilities of the remaining SAECC countries and the assessments of Botswana, Malawi and Swaziland were updated. Botswana coordinated the exercise and country researchers were appointed from the respective countries. The country reports were finalised in Gaborone

during August 1984, and a draft Agricultural Research Resource Assessment (ARRA) zonal report should be completed by November 1984, and will be reviewed by CTC (Agricultural Research) during December. The final amended Zonal Report should be available by March 1985.

- B. A SADCC Agricultural Research Conference, was at the initial request of the CTC for Agricultural Research, financed by CDA. The Conference was held in Gaborone from 21-23 February, 1984. The deliberations were based on presentations of the initial four SADCC Research Projects; on presentations of what the outside world may have on offer to SADCC research cooperation, on the initial aspects of SADCC research capability; and on emerging SADCC food security policies. The Conference proceedings have been published (April 1984), and distributed to participants, interested organisations and persons. Copies are available from the Coordinating State.

GRAIN LEGUME IMPROVEMENT PROGRAMME FEASIBILITY STUDY (AUGUST 1984)

SUMMARY

1. Request for Feasibility Study

The study was requested by the SADCC Consultative Technical Committee (CTC) for Agricultural Research in April, 1983, and was carried out with the financial assistance of CDA (Cooperation for Development in Africa) by an international group of consultants during the period November 1983 to July 1984.

2. Importance of Grain Legumes

Grain Legumes are an important component of the diet of the peoples of the SADCC countries, and the main vegetable source of protein. Total area of production is estimated at over 3 million hectares in six of the nine countries. However, grain legumes are typically components of complex cropping systems and, therefore, production statistics are undoubtedly greatly underestimated. Estimates on area production in six SADCC countries indicate that beans and groundnuts, with over 1 million hectares each, are most important and cowpeas are third with about half that number of hectares.

3. Constraints on Production

Yields of grain legumes for the SADCC region are generally lower than average for all of Africa, which in turn are low compared with the world-wide average. Principal constraints include low yielding varieties, damage by diseases and pests, unreliable rainfall, soil infertility, seed production problems, and pricing and marketing policies. Field trials with improved germplasm in the SADCC region have indicated a potential for overcoming many of the limits on production. Thus, it is anticipated that the prospects for greatly increased production are favourable, as well as the possibility of widening the area of production through better adapted varieties for marginal ecological zones.

4. Current Status of Research

All countries have research programmes on grain legume improvement, but most operate under mild to severe restrictions in scientists, facilities and operating funds. A survey of seven of the nine national grain legume research programmes reveals a total of 65.5 scientists. Of those 19 are expatriates leaving a total of 46.5 national researchers. Of these, 34.3 scientists are actively participating in research and 12.2 are in training. Furthermore, 13.7 of the scientists are at B.Sc. level, 15.6 at M.Sc. level, with only 5 scientists at the Ph.D. level. An assessment of additional staff needed to provide an adequate programme reveals that national programmes need to be upgraded in both numbers and educational level. On the whole the research is carried out in relative isolation and without desirable interdisciplinary links. Thus, both the level of the research programme and the staff in national programmes could benefit from a vigorous regional network of research and training.

5. Selection of Crops for Research

Some 12 crops were considered for inclusion in the Grain Legume Improvement Programme (GLIP). However, given the likelihood of budget limitations and the history of other international research institutions which have attempted to cover too many crops, it is recommended that three crops be

included initially in the GLIP; namely, beans, cowpeas and groundnuts. Criteria used in the selection of these crops were: current importance in terms of production and area; importance for food production for the smallholder; traditional crops or those readily acceptable by the consumers; adaptability to traditional mixed cropping systems of smallholders; and a good potential for improvement of production.

6. Objectives

The goal of the Grain Legume Improvement Programme is two-fold: (1) increase production and reduce periodic shortages caused by low yielding varieties, diseases, insects and drought, and (2) the strengthening of the national research programmes through collaborative research, the training of national scientists and support personnel and the providing of financial support where necessary.

7. Organisational Alternatives

Three alternative organisations are presented for consideration. Each would establish a research network extending ultimately to all SADCC countries. They are illustrated by organograms (fig. 1-3). Staffing, advantages and disadvantages, location alternatives and indicative operating budgets are listed for each. The administrative staff is the same for all alternatives and consists of a Director and Administrative Officer and supporting staff to be located in Malawi. All alternatives also have an economist and training officer. The number of research scientists varies according to the requirements of each alternative.

Alternative I

Two research teams, one at high elevation in Malawi and the other at low elevation in Mozambique. All three crops - beans, cowpeas and groundnuts - receive attention at both locations. Eighteen senior scientists are required. The indicative operating budget for five years is approximately US\$ 16 million.

Alternative II

Similar to Alternative I with two research teams, one located at high elevation in Malawi conducting research on beans and groundnuts and one at low elevation in Mozambique giving attention to cowpeas and groundnuts. Fourteen senior scientists are required. The indicative budget for five years is approximately US\$14 million.

Alternative III

Three research teams in each of three SADCC countries, each team being responsible for one crop. Sixteen senior scientists are required. The indicative budget for five years is approximately US\$16 million. Recommended locations are: ground nuts - Malawi; cowpeas - Mozambique; and beans - unspecified high elevation location.

8. Research Programme Emphasis

The research on grain legumes should concentrate on the genetic improvement of the crops and the improvement of cropping systems, particularly for the smallholder. A large applied research programme is visualised, requiring plant breeders, plant pathologists, entomologists, agronomists, physiologists and economists, working as inter disciplinary teams and interacting with their counterparts in national research programmes. The transfer of research results to the smallholder will constitute a major thrust of the research.

Although this concerted research effort can yield some agriculturally important results almost immediately, a long term effort (25 years minimum) will be required for major contributions, as is characteristic of genetic improvement programmes.

9. Training

Of importance equal to that of research, is the training of national research scientists. Only through training can the national programmes rightfully assume the responsibility for grain legume improvement. Thus, a strong educational component is recommended, involving both long-term training at universities within and outside of the SADCC region and short-term training in specific skills at regional and international research institutes. The inventory of grain legume scientists in the various SADCC countries (mentioned earlier) revealed the need for additional scientists and provided a basis for estimating the training requirements for each country according to discipline and level of education needed (Chapter VI). It is proposed that, in the first five years, a total of 31 scientists be trained, 26 at the M.Sc. and 5 at the Ph.D level, with appropriate short-term specialized training for both professional and subprofessional staff.

10. Financial Support to National Programmes

As part of the strengthening of national research programmes, it is recommended that financial or in-kind support be provided where needed to allow full participation in activities relative to the regional research effort on grain legumes.

11. Linkages

The GLIP will establish a research network of national, regional and international organizations to collaborate on improvement of grain legumes. The indicative budget may project a substantial programme, but without the backing of a strong cooperative relationship between research organisations and individuals, it will fall short of contributing substantially and effectively to accelerated agricultural development. It is particularly important to establish appropriate links with and to enlist the full support of the three international centres concerned with beans (CIAT), cowpeas (IITA) and groundnuts (ICRISAT). Linkages with the CRSP research projects in SADCC and elsewhere, the various bilateral programmes, and especially the SADCC national research programmes are mandatory.

12. Management

It is recommended that the GLIP be under the immediate direction of a Project Director who shall be a senior scientist and responsible for developing and operating the research and training programmes. He will be responsible to a Management Entity yet to be designated. Proposals for the management and operation of GLIP should be requested from organisations with the potential for managing the GLIP.

12. Benefits

An attempt at an economic analysis has yielded encouraging results. The internal rate of return is approximately 50 per cent. The net present worth, at 30 per cent discount rate, is approximately US.\$23 million. These values make the investment very attractive.

Soil and Water Conservation and Land Utilisation

SOIL AND WATER CONSERVATION AND LAND UTILIZATION

BACKGROUND

The Governments of the SADC countries through Agriculture Ministers having set themselves to develop fully the agricultural potential of the SADC region, realized that they had two central resources to concentrate on, soil and water which are most important to agriculture. At the same time though, they realized that these resources limited as they are were in the most cases, threatened because of poor conservation and utilization practices.

Indeed the awareness of the seriousness of the threat to these resources was registered at the time of the declaration "Southern Africa: Toward Economic Liberation" made at Lusaka on 1st April 1980 which states in part: "A majority of the people of Southern Africa are dependent on farming and animal husbandry. Their future livelihood is threatened by environmental degradation and in particular by desert encroachment as well as recurrent drought cycles Both environmental protection and food security are major challenges both nationally and regionally".

With the stage thus set by the awareness of the need to strengthen programmes to protect our environment, the SADC Council of Ministers entrusted the Kingdom of Lesotho with the task of coordinating regional activities relating to soil and water conservation and land utilization.

ACHIEVEMENTS

To facilitate the planning of the coordination programme, there was need for the coordinating country to examine the nature of the conservation and land utilization problems in individual member countries and the methodology's being followed to resolve these problems. The intention being here to assess the similarities and indeed differences that existed both in the conservation and land utilization problems and in the specific methods being followed by member countries. In addition such as assessment would take into consideration the availability of documentation as well as trained manpower within the region.

To undertake such an exercise, the Swedish International Development Agency (SIDA) was requested by the Government of Lesotho, and agreed, to provide technical assistance. Accordingly a consulting company

Swedeforest Consulting A.B was engaged to advise on the coordination programme. The report of the consultants was presented to a meeting of Soil and Water Conservation and Land Utilization officials, held at Maseru in January 1983.

The period from January 1983 to July 1984 did not see much activity due to the lack of funds for implementing the programme proposed by the consultants in their report. In July 1984 however, using some funds available under other SADC programmes, a meeting of soil and water conservation and land utilization officials was called to discuss the details of the coordination programme and in particular to prioritize on the activities mentioned in the report. Parts of programme that is designed by the consultancy which consist mainly of training, are jointly sponsored by SIDA and USAID. Further developments however, depend on the availability of funds from cooperating governments and agencies.

THE CO-OPERATION PROGRAMME

The co-operation programme is to be co-ordinated by a unit in the Ministry of Agriculture of Lesotho. The unit will be jointly funded by SIDA and the Government of Lesotho. The roles of the co-ordination unit will include the following:

- a clearing house for regional information
- resource co-ordinator
- publisher
- catalyst.

Specifically, the unit will pursue these aims and objectives which represent the co-ordination programme:

- To improve the performance of governments in soil and water conservation and land use

- To avoid conflicts of interest within and between states, that may arise out of environmental degradation
- To develop policies and practices based upon involving the people in conservation activity
- To integrate relevant disciplines and the contribution of the various concerned institutions in solving problems of conservation and land utilization
- To bring about a national sharing of training and other technical facilities among member countries
- To bring about a purposeful sharing of data information, knowledge, and know-how relating to the aims of the programme.

The desirable end result from here can be characterized as: action, careful planning and education to facilitate a broad participation by the people in the areas of conservation and utilization of soil and water. The strategy for the implementation of the programme is in the following three steps:

- Step One: Learning projects in the form of seminars or workshops, bringing people from all countries together to work on data.
- Step Two: Action learning projects designed in the step-one seminars or workshops, in the form of sustained work in which all countries may participate, to develop methods and methodology (e.g. pilot projects, demonstration projects, consultancy studies etc.).
- Step Three: Joint programmes, involving two or more countries, which require ongoing executing action (e.g. joint monitoring, international river basin management, permanent arrangements for sharing training facilities etc.).

The implementation of the programme, and the direction that it will follow, will be decided in a planning seminar which is to be the first seminar to be held under step one. In this seminar areas additional to those in the consultants report may be considered. These will include the preparation of projects for funding particularly, a function that the unit will undertake in the course of mobilizing resources for action. It should be realized that, the current funding addresses the up-grading of the state

of the art in conservation and utilization mainly. There remains therefore, need for funds to cover the action component (e.g. when a river basin management project comes up, it would still need funding other than the present).

CONCLUSIONS

The co-ordination programme is now at a point where it has become functional. While the presently funded part of the programme is of a general training nature, it should be borne in mind that the success and conclusion of the programme will be with action on the ground. Indeed the success of the catalytic function of the unit rests in its ability to improve the capability of the individual member states to solve their problems firstly, and secondly, to mobilize resources for action programmes which should follow closely on the present learning programme. Cooperating governments and agencies are requested to note that their assistance will be called upon in the implementation of the action programme.

FISHERIES AND WILDLIFE

INTRODUCTION

This report provides an up to date picture of the activities of the Fisheries and Wildlife sector outlining what has been achieved by the sector since the 1984 Lusaka Conference.

At the SADCC Lusaka Conference it was reported that seven projects had been identified during meetings of the sector, of these five were presented for funding while two had been deferred for lack of sufficient data to justify them.

This report is divided in three parts:

- (a) Summary of progress since the Lusaka meeting.
- (b) Sector Paper - outlining strategy and future work programme.
- (c) Projects - a detailed description of individual projects so far identified.

No attempt has been made to prioritise projects as such although it may generally be said that projects affecting the whole region naturally have priority over those that involve a small group of states or individual states even though the ultimate goal of all of them is to increase fish production to feed the entire region.

A. SUMMARY OF PROGRESS

Coordination of the Fisheries and Wildlife sectors of SADCC was assigned to Malawi by the SADCC Council of Ministers in July, 1981. Immediately after the announcement of the assignment contact was established between Malawi fisheries and wildlife officials and their counterparts in the remaining eight member states.

By November 1981 some data on fisheries and wildlife potential of the region had been gathered enough to prepare a preliminary report for the Annual Conference held in Blantyre, Malawi in November, 1981.

The report, which included information on areas of possible cooperation between member states, was very preliminary and therefore not ready for consideration by the Conference. It was, however, noted by the Council of Ministers.

A meeting of the Fisheries and Wildlife Sub-Committee was approved by the Council of Ministers so that the preliminary report could be fully discussed by its technical members before identifying regional projects in these sectors.

Member states were represented at the Sub-Committee's meeting held in Malawi from 22-25 February 1982 by specialists in fisheries and in wildlife.

The Sub-Committee proposed four projects, namely:

- (1) Regional Fisheries Training Centre
- (2) Fisheries Data Bank
- (3) Regional Fish Marketing Survey
- (4) Wildlife Conservation, Management and Utilisation - Phase I.

Project outlines prepared after the Malawi Sub-Committee meeting are the following:

- (1) Lake Kariba Fisheries Research Development (Zambia/Zimbabwe)
- (2) A Joint Study of Pelagic Fishery Resources of Lake Malawi/Nyasa (Malawi/Mozambique/Tanzania)
- (3) A study to Identify Regional Projects/Programmes of Production and/or Commercialisation of Fishing and Fish Processing Material and Equipment in the SADCC Region.

These proposals were submitted as follows: (1) by Zambia; (2) and (3) by Mozambique.

At the sectors' subsequent meetings two more projects were finalised and presented to the Agricultural Ministers and approved. A total of five projects have now been presented to donors for funding, and all these have received pledges of support from donor Governments. The picture is as follows:

- 4.4.1. A Joint Research of Pelagic Fishery Resources of Lake Malawi/Nyasa (support pledged by United Kingdom and Italy)
- 4.0.1. Regional Fish Production, Processing and Marketing Survey (support pledged by Italy)
- 4.8.1. Lake Kariba Fisheries Research Development (support pledged by DANIDA)
- 4.0.2. A Study to Identify Regional Projects/Programmes of Production and/or Commercialisation of Fishery and Fish processing Materials and Equipment in the SADCC Region (support pledged by Italy)
- 4.2.1. Fisheries Investigation in Botswana (supported/pledged by NORAD)

After the pledging conferences the donors were contacted for further planning of methods of financing and implementing the projects.

The Government of the United Kingdom responded by requesting terms of reference for a consultancy to come to Malawi to prepare the financing and implementation of programmes. The terms of reference were prepared and agreed by the three countries and submitted to the U.K. The donors have informed the Malawi Government that a shortlist of consultants has been drawn up and this will be submitted to the three countries for approval.

There is still no progress on projects submitted to Italy even after strenuous efforts. At the Maseru Agricultural Ministers meeting it was resolved that these projects Regional Fish Production Processing and Marketing Survey and Study to Identify Regional Projects/Programmes of Production and for Commercialisations of Fishing and Fish Processing Materials and Equipment be re-submitted for pledging.

Both NORAD and DANIDA have confirmed their willingness to support the two projects, Fisheries Investigation in Botswana and Lake Kariba Fisheries Research and Development respectively.

The donors have sent experts to the project areas to prepare the ground work for feasibility studies.

Finally three new projects were submitted and approved at the Maseru, Lesotho, Agriculture Ministers meeting.

These are:

- 4.0.5. Regional Fisheries Training Project (Submitted by Malawi as Coordinator)
Terms of reference for a feasibility study were drawn up and approved.
- 4.3.1. Integrated Fish Cum Duck farming Development in Lesotho (submitted by Lesotho)
- 4.4.3. Integrated Pig/Fish Farming Development and Research Project At Kasinthula (Submitted by Malawi as Coordinators).

B. REGIONAL PROGRAMME OF FISHERIES AND WILDLIFE PROJECTS

Introduction

Development of the fisheries potential of the region can be seen as one of the means by which SADCC can achieve self sufficiency in food production.

Three of the member states have access to the sea and therefore have the potential for development of the fisheries resources within their territorial waters or the Exclusive Economic Zones (EEZ). Of the remaining six member states which are land-locked, four have large freshwater lakes, rivers and swamps while the last two states could develop aquaculture as a means of providing fish locally. To a large extent, however, all the land-locked states could absorb the surplus fish produced by the coastal states if their fish production was stepped up.

Project Identification Process

Through technical consultations and data collection by a questionnaire, it has been established that the following broad areas have, over the years, lacked support and that the situation has resulted in little or no development of the fishery potential of the region:

- manpower development
- research, data collection and interpretation
- development of aquaculture

Manpower development in the fisheries and wildlife management sectors have relied on overseas assistance through training scholarships to study in countries with completely different fisheries and wildlife problems.

Research and development data collected in the past has not been compiled properly for fruitful use. This has resulted in some research work being repeated or duplicated thereby wasting scarce financial and manpower resources. Needless to say, most of the research done has been by experts from outside the region, mostly from overseas, upon whose departure from the region little or no follow-up action was taken, nor was the data every analysed and stored properly.

Fish catching techniques introduced have relied on materials and equipment imported from countries outside the region - again mainly from overseas. Little attempt has been made to develop on a large scale the local production of such materials and equipment. The constraint in this development activity has been the smallness of the market as each state has not looked beyond its borders for such markets.

Like markets for locally produced fishing materials and equipment, those for fish have also been limited to include only the domestic ones. Coastal states have thus not been able to expand their fishing efforts for fear of over production, among other reasons, yet their immediate non-coastal neighbours have been importing overseas surpluses to meet their deficits in animal protein supplies. Other non-coastal states like Botswana have considerable fishery potential in their inland waters but for lack of domestic markets such resources have remained virtually untapped.

Because of erratic rainfall and continuous drought, livestock and crop production is becoming increasingly difficult in the region. This has led to shortages in protein supply. There is therefore an urgent need within the region to find alternative ways of providing protein.

The deteriorating situation in the region has necessitated most countries to resort to irrigation schemes wherever this is feasible. This has offered an opportunity for integrating fish farming with crop production in the irrigation schemes. Two such projects where fish culture is integrated with animals and crops have been proposed by Malawi and Lesotho.

C. PROJECTS

Project No. 4.0.1.

- Regional Fish Production, Processing and Marketing Survey

Identification and Summary

- Origin of the Project : Submitted by the Government of Malawi after approval by All member states.
- Project Authority : Department of Fisheries, Ministry of Forests and Natural Resources, Malawi
- Nature of the Project : To conduct a survey of the fish supplies in the SADC region, consumption in each country, unsatisfied demand, country by country present fish processing and preservation practices, problems inhibiting wider distribution; and, to recommend measures the region should take to overcome the problems identified. The work will be undertaken by a team of consultants assisted in each country by national staff.
- Cost of Project : US\$100 000
- Foreign Currency Part: : 100%
- Duration : 6 months
- Desirable Starting Date : 1984/85

Description of Project

Fish, which is the main source of cheap animal protein in the region, is produced in large quantities in at least six of the nine member states. However, in the region as a whole, there is always an unsatisfied demand for fish not necessarily because the region cannot meet this demand from its production, but because the fish produced is not widely distributed owing to technical difficulties.

The project aims at conducting a survey to identify: areas where production can be increased; which unsatisfied markets such additional production can serve; what improvements in the distribution methods need to be introduced; and any other trade problems that need to be solved in order to allow easy movement of fish from one side of the region to the other.

The consultants carrying out this survey will prepare a comprehensive report containing their findings and recommendations (for a Phase II if necessary)

Objectives

The aim of the project is for a study to focus on current and potential fish production, processing and marketing and to recommend on how the region can best achieve self-sufficiency in fish requirements.

Costs

This project, which has an initial life of eight man months is estimated to cost \$120,000 to pay for a study to be undertaken by the following experts:

- (a) Fish Marketing Economist (4 man/months)
- (b) Fishing Processing Expert (4 man/months)

The qualifications for the personnel required has been drawn up by the fisheries consultative committee as follows:

- (1) Fish Marketing Economist
He should have a degree in Economics from a recognised University. He should have worked in fish marketing and planning of fish development project for at least 5 years. Experience in a developing country will be an added advantage.
- (2) Fish Processing Expert
He should have a Diploma in Fish Harvesting Technology and Processing or equivalent. Should have worked in a developing country for at least 5 years. Experience in Africa will be an added advantage.

Progress During the Past Year

The project was submitted for funding at the last conference and the Government of Italy pledged to finance it. However the donor Government has not come back to the coordinating state (Malawi) for arrangements of detailed financing and implementation agreements.

Future Activities

The project is ready to start once the pledging donor Government has finalized the financing and implementation agreements to be signed between participating member states and donor Government.

Project No. 4.0.2.

- A Study to Identify Regional Projects/Programmes of Production and/ or Commercialisation of Fishing and Fish Processing Materials and Equipment in the SADC Region

Identification and Summary

- Origin of the Project : Submitted by the Government of Mozambique
- Project Authority : Department of Fisheries, Ministry of Forestry and Natural Resources, Malawi
- Nature of the Project : This is a survey of the fishery materials and equipment manufacturing industry in the SADC region. The survey will report on the materials and equipment which are currently being manufactured locally and those which could be manufactured locally, the local demand for these; and recommended to what extent production should be stepped up to meet the regional demand. These materials and equipment will include fishing nets, ropes, floats, weights, accessories, deck equipment (e.g. fish boxes), cans for canneries, finished boats and boat building materials, e.g. wood.
- Costs of Project : US\$60 000
- Foreign Currency Part : 100%
- Duration : 3 months
- Desirable Starting Date : 198 /8

Description of Project

A consultancy will be required to prepare and conduct a study of the existing fisheries as well as those planned for the future in each Member country, particularly to make an inventory of the gear used (or planned to be used, in the case of projected development).

The inventories will include fishery supporting industries (e.g. net making factories etc.) found in the region. Also an inventory of imported materials and equipment used in the fishing industry will be made.

Recommendations will be made as to whether some existing local industries could be expanded to manufacture materials and equipment used in the fishing industry to meet the requirements of the region in this field. Industries which could be expanded or converted to include the manufacture or supply of materials and equipment for the fishing industry include:

- (a) textile factories (for fishing nets)
- (b) metal industries (for fish boxes, boatbuilding materials, cans, etc).
- (c) cement factories (for ferro-cement boats)
- (d) plastic and synthetic fibre industries (for fish boxes, ropes, nets, twines, etc.)
- (e) wood industries (for boatbuilding, fish boxes, cans, masts, etc.).

Objectives

The aim of the project is to promote technology, transfer and exchange of subsidiary industrial products in the fisheries sector, in order to increase the degree of regional integration thus contributing to greater economic and technological independence of the SADCC countries. In this way it would identify and recommend projects/programmes of regional cooperation in subsidiary industries in the fisheries sector.

Costs

This project, which has an initial life of twelve man months is estimated to cost \$175 000 to meet the cost for salaries, travel, accommodation and subsistence allowance etc. for

- (a) Fisheries expert (4 months)
- (b) Expert in industrial and small scale fisheries equipment and materials manufacture (4 months)
- (c) Fisheries Economist (4 months)

The qualifications of the personnel required has been drawn up by the fisheries consultative committee as follows:

- (a) Fisheries Expert
Should be a master fisherman, with at least 5 years experience in Africa.
- (b) Expert in Industrial and Small-scale fisheries equipments and Material Manufacture
Should be an engineer or technician who has worked in the manufacture of fisheries equipment and materials for at least 5 years.
- (c) Fisheries Economist
Should have a degree in Economics from a recognised university. He should have experience in planning and evaluation of fisheries projects.

Progress during the Past Year

This project was submitted at the last conference and the Government of Italy pledged to give it financial support.

Future Activities

The project is ready to start once the prospective donor state has provided the necessary funds after concluding the required financing and implementation agreements with the participating Governments.

Project No. 4.0.5.

- Regional Fisheries Training Project

<u>Location</u>	:	SADCC Region
<u>Presented By</u>	:	Malawi as Coordinator
<u>Objective</u>	:	The aim of this study is to help the identification of a regional approach to Fisheries Training.

A consultancy will be required to prepare and conduct a study of the existing Fisheries Training Institutions and the training requirements of the region.

Recommendations will be made as to whether a central Training Centre should be established or existing institutions expanded to meet the requirements of the region.

Terms of Reference

The terms of reference for the consultancy will be as follows:

1. To assess the existing and planned fisheries courses in the region.
2. To carry out a comparative study of the various fisheries courses offered in the region and make recommendation as to which training institutions should be upgraded to cater for the whole region.
3. To assess specific training requirements of each SADCC member state. These requirements should be corrected to existing facilities for different courses.
4. Evaluate the weaknesses and strengths of each institution in relation to the courses offered.
5. Identify which courses are presently not being offered in the region and determine which courses should be introduced.

Project Targets

1. To produce a report showing the present training courses, infrastructure and other facilities available. Information about institutions should include:
 - (a) Entry qualifications
 - (b) Syllabi
 - (c) Location and facilities available
 - (d) Teaching staff
 - (e) Recreation facilities
2. Make a recommendation on what courses should be taken within the SADCC region using the existing facilities.

3. Determine how these courses would be included in the selected training institutions.

Project life

The project will be for 12 man months.

Personnel Required

- 1 Fisheries Economist 6 man/months
- 1 Fisheries Training Expert 6 man/months

Qualifications

Fisheries Economist

He should be a graduate in economics from a recognised University. He should have worked on fisheries projects for at least 5 years. Experience in a developing country will be an added advantage.

Fisheries Training Expert

He should be a graduate or a person of equivalent qualifications. He should have at least five years experience in fisheries training with knowledge of both fresh water and marine fisheries. He should also have a proven ability in curriculum development for fisheries training institutions.

Costs

The Project will cost US\$150 000.

Future Activities

Project is ready to start once the prospective donor state has provided the necessary funds after conducting the required financing and implementation agreements with the participating Governments.

Project No. 4.2.1.

- Fisheries Investigations in Botswana

Location : Botswana
Presented By : Botswana

Objectives

The main aim of the project is for the consultancy to work out a plan for the development of a viable fisheries in Botswana. The successful development of this resource will create job opportunities in the rural areas with high levels of unemployment. Up to 3,000 persons could be employed in the fishing, processing and marketing activities. Furthermore, many jobs would be created towards the poorer people in the country. The perennially low income of the cattleless rural dwellers in the north and seasonal fluctuation of income from arable and cropping creates hardship for many of the residents local to these fishing areas. Improvement of the fishing technology, coupled with the provision of rational guidelines for exploitation of the relatively large and untapped fish resources will provide adequate protein and more stable and higher income for the future fishermen.

Progress during the Past Year

A project preparation team from NORAD have visited Botswana to undertake the necessary background for the implementation of this project.

Cost

It has been estimated that the project will cost US\$748 000.

Project No. 4.3.1.

- Integrated Fish-Cum Duck Farming Development in Lesotho

Location : Lesotho
Presented by : Lesotho

Objectives

The system adapted in Lesotho involves the rearing of ducks with fish. In addition to the advantages of manure from the ducks, trials in Lesotho (Fisheries Department) based on the experiments conducted in Israel have shown that ducks waste 10-15% of their feed when feeding. If ducks are reared directly above a fish pond this food becomes available to the fish. It has also been established that ducks grown 10% faster in water than on land and they are also cleaner and healthier.

In this adapted system, direct feeding to the fish was reduced about 80% and it was possible to produce 2,800 kg of dressed duck meat, 2,000 kg of fish per hectare in one year (8 months of duck production and 6 months of fish growth). It is possible in this system to double the production. By comparison, when providing supplementary feed to the fish only, pond production averaged 1,000kg/ha. which was only marginally profitable.

The aim of the project is to demonstrate that intensive fish culture which depends mainly on supplementary feeding is not necessarily appropriate for a poor developing country. Instead an integrated agriculture - aquaculture system is proposed, which efficiently utilises the water resource while keeping feed costs, which constitute the major running cost component, at a minimum.

This is an important project for the SADCC region because the technology developed by the Lesotho Fisheries Department can be shared by the member states. The expertise and experience on the integrated fish-cum-duck culture acquired by Lesotho can be introduced in other countries in the region with interest and potential for aquaculture. Furthermore this project is consistent with the objective of SADCC is to be self-sufficient in food production.

Project Area

The project will be carried out in the lowland districts of Lesotho. First, it will start with the existing fish pond schemes which already have about 20.0 hectares of reliable water source.

In addition to these schemes it is estimated that there is about 100 hectares of small dams and reservoirs which could be used for fish-cum-duck culture. These reservoirs have already been surveyed and showed reliable amounts of water.

Project Objectives

- To provide low-cost high quality protein to the rural communities.
- To provide an economic activity and remuneration to the rural farmers.
- To increase the efficiency, productivity and profitability of fish and duck farming by adopting an integrated fish-cum-duck culture system.
- To promote regional cooperation among the SADCC member states in the exchange of fish and duck feed formulation/production techniques drawing on the experiences of the Lesotho Fisheries Department and engage in trade in such products.

- To spread this efficient system to the rural communities on a large scale through the provision of improved duck feed production, increased duckling production, and increased fish fingerling production.

Project Target

The current fish hatchery facility of 3.0 hectares is to be increased by 4.5 hectares to meeting fingerling demand. The target is set at 340,000 fingerlings over and above the 120,000 currently produced per year.

Project Life

The project is planned to take 3 years.

Execution and Supervision

The project will be run by the Department of Fisheries of the Government of Lesotho.

Project Cost

The project cost is as summarised overleaf.

FINANCIAL SUMMARY (USA DOLLARS)

Donors Contribution

1 Auger	2,800
2 Storage sheds (10m x 15m x 4m)	45,500
4 Brooder houses (100m ³)	27,600
1 14,000 duck egg incubator	16,600
Power supply improvement (200KV transformer H.T. lines)	10,400
3 vehicles	28,200
Initial capital for ingredients	62,100
Miscellaneous	9,800
Physical Contingency 5%	13,400
Price contingency 10%	<u>26,800</u>
Total donor finance	243,200

Local Government Contribution

Personnel emoluments	11 000
Hatchery extension	49,700
Fish and duck processing facilities	<u>4,300</u>
Total local contribution	65,000
Total project cost	<u>268,000</u>
Grand Total	<u><u>309,200</u></u>

Future Activities

Project should be submitted to the next donors conference. It is expected that the project would commence once the pledging donor Government has finalised the financing and implementation agreements with host government.

Project No. 4.4.3

- Pilot Integrated Fish/Pig Farming Development and Research Project
At Kasinthula (Malawi)

Location: : Malawi
Presented By: : Malawi

Objective

Malawi is a landlocked country with a relatively high proportion of water resources amounting to 250,000km² of 200,000 for the total area of the country.

The lower shire lies in the extreme south of the country extending from Kapichira Falls in the north to Mozambique border in the south. Administratively, the area composes of Nuanje and Chikwawa districts with estimated population of 362,917 (1981 population figures) covering an area of 2,600 square miles. A large part of the area is occupied by flood plain of the Shire River with associated permanent marshes.

The area is characterized by low rainfall and this has led to the establishment of the irrigation schemes by the Ministry of Agriculture. The area currently under irrigation is approximately 200 hectares and Kasinthula fish farming research project is within this area.

Fish farming development has been studied at the estate level at government stations. The preliminary results obtained from these studies indicate that there is potential for fish farming in the area. However, the techniques developed so far are mostly applicable to commercial fish farming which necessitates high capital outlay and high level of management. This method is not appropriate for small scale fish producers who have limited capital and technical know-how. It is therefore necessary to develop methods which require less capital and managerial ability.

Successes in small-scale fish farming which does not require large capital investments have been well documented from South East Asia. Their studies indicate that mixed fish farming where crops/animals/fish are grown together can be successful at small-scale level. However, development of fish farming has been constrained by lack of resources to adequately carry out these studies. As mentioned in the text, erratic rainfall and continuous drought have made livestock and vegetable production increasingly difficult, therefore further aggravating the existing protein deficiency in the region. There is therefore an acute shortage of protein being experienced by the local people. There is an urgent need within the region to find alternative ways of providing protein.

The deteriorating rainfall situation in the region has necessitated most member countries to resort to irrigation schemes and this offers an opportunity of developing fish farming into crop production in the irrigation schemes.

Fish farming development has been attempted within the region, but this appears to be of limited success to date. Studies done in South East Asia indicate that integrated fish farming including crops/animals/fish can be highly successful. This, therefore, requires that appropriate research be done in the development of techniques in fish farming that would adequately use the research in the irrigation schemes.

Since the drought resistant crops recommended for drought prone areas are basically cereals i.e. sorghum, millets and maize, they lack a balance of essential amino acids and essential minerals and therefore this project would provide a nutritional balance and food security. Adequate protein intake in drought hit areas where irrigation is possible could be assured. This project is a pilot scheme, the techniques of which could be extended to other areas within the SADCC region where drought is a serious problem and food deficiency a common occurrence. The SADCC area would also benefit in that the surplus fish produced would be sold to neighbouring countries who also have an acute shortage of animal protein.

Project Objectives

There are five specific aims of this project proposal which is directed towards alleviating an inadequate supply of animal protein in the region and developing suitable techniques in the integrated fish farming.

This project aims at:

- improving the supply of fish and pig meat through integration of fish and pig farming.
- Demonstrating the techniques of integrating fish and pig farming to subsistence and commercial farmers for possible adoption on other irrigation schemes.
- The practical techniques learned from this project could be extended to other areas. Therefore the project will be used to obtain relevant information on chemical factors and biological parameters to help better understanding of the relationship between physio-chemical factors and fish farming. The project will establish criteria for collecting basic economic and farm data of fish/pig farming to demonstrate the least cost production methods through farm budget analysis techniques in assessing variations on inputs in the farm production mix.
- Export the surplus fish to SADCC member countries where fish/animal protein is deficient as a result of continuous drought.

Project Goals

- To increase current fish yields from 0.2 tons to 1 ton per hectare to 5 tons to 10 tons per hectares.
- To increase pig production yield from 500 kg to 3,200 kg/ha. through the introduction of improved breeds.
- To develop techniques of integrated crop/fish/pig production in fish farming.
- To demonstrate the viability of integrated fish farming to farmers.
- To improve the availability of animal protein so as to reduce the incidence of malnutrition in the lower shire.

Project Life

The project life is planned to take 5 years.

Execution and Supervision

The project will in the first 3 years have 3 experts; these will be the Project Manager, Research Officer (Fisheries) and Research Officer (Animal Production). These experts would be recruited from either within the region or overseas. Three counterpart Malawians will be attached to the project to understudy the three experts. The Project Manager who will be assisted by the two Research Officers and Extension Officer will be the immediate controlling Officer of the project. The Project Manager will be responsible to the Chief Fisheries Officer who will be the controlling officer for the Ministry of Forestry and Natural Resources.

Project Cost

The project cost is as summarized below:

<u>Donor finance</u>	<u>Item</u>	
002	Building	169,650
003	Water Supplies	5,850
004	Roads and bridges	3,900
005	Other construction	15,600
006	Plants and vehicle	47,450
007	Other Equipment	16,900
008	Personal Emoluments	137,150
009	Maintenance and running costs	133,185
	Contingency physical (5%)	16,537
	Price Contingency (10%)	49,608
	Total Donor Cost	<u>595,830</u>
	<u>Local contribution</u>	
	Personal Emoluments	131,300
	Total Project cost	<u>660,985</u>
	Sub Total	<u>66,145</u>
	Total cost with contingencies	<u>727,130</u>

Future Activities

The project will start once the prospective donor Government has provided the funds and finalized financing agreements with the host country.

Project No. 4.8.1.

- Lake Kariba Fisheries Research and Development (Zambia/Zimbabwe)

Location : Zambia/Zimbabwe
Presented By : Zambia

Objectives

The aim of the proposed project is to study various aspects of fish resources and recommend to both countries alternative ways and means of managing the fishery for each to reap the best sustained benefits. The study would be multi-disciplinary, but would place emphasis on: fish limnology, Stock Assessment, Fishing Career Development and Fish Processing.

In view of the distance involved, it is proposed to carry out the work of the project from two main centres. These main stations could be at Kariba on the Zimbabwean side and Sinazongwe on the Zambian side. Sub-stations could be established if the need arose.

Limnological, biological, fishing gear trials and environmental pollution studies could be carried out at pre-selected sites distributed all over the lake. Fish processing could be done at the main stations using samples collected from gear trials and environmental pollution studies could be carried out at pre-selected sites distributed all over the lake. Fish processing could be done at the main stations using samples collected from gear trials and biological research.

The existing facilities at Sinazongwe Fisheries Centre and Kariba Research Institute could be made use of on the project. One of the two stations could also be made the headquarters of the project. A decision on this should be taken after inspection of available space and existing permanent infrastructure.

During the discussions, the following terms of reference were approved by the Fisheries Sub-Committee.

Costs

It is proposed that the project should take five years during which time US\$717,000 is requested for the project to be spent on an annual basis.

Project No. 5.0.3.

- Relief Programme for Drought Stricken Wildlife Areas in Southern African Region

Introduction

The drought conditions that have continued to persist over most of these regions in the last three years with no signs of abating have had a telling impact on wildlife and wildlife areas of the region. Considering that most of the wildlife areas in this region are located on marginal areas supporting low quantities of water and vegetation resources, the drought effects have reduced further the resource base, resulting in die-offs of certain animal species. The continuing drought conditions are imposing two strains on the wildlife resources of this region. First, the continued scarcity of water and food sources have shrunk the carrying capacities resulting in a considerable amount of die-offs. Secondly, these die-offs are genetic and biological viability of the populations with the result that if urgent corrective measures are not taken, some of the regions wildlife populations will fall to dangerously low levels.

To overcome this pressing problem, the wildlife strategy for the region has had to be changed to the extent that there is a more urgent need than ever to implement a drought relief programme. This programme's immediate objective would be to relieve the pressure imposed by drought on the wildlife populations through a series of well planned and coordinated sub-programmes of translocations, stocking, re-stocking, game ranching, and culling. These measures would enhance the supply of animal protein to the rural population.

Location : All SADC Countries
Presented By : Malawi, on behalf of SADC countries

Objectives

1. To relieve pressure on grazing lands and browse by moving excess animals.
 - a. Reason:
 - I. Avoid dropping populations to dangerously low levels.
 - II. Protection of all vegetation from over utilisation.
 - b. Method:
Game capture and translocation.
2. Translocating animals within a particular country where there is adequate food and water resources.
3. Re-introducing wildlife to new protected areas where this adequate food and water resources.
 - The Subcommittee on Fisheries and Wildlife recommends that 10% of the total land mass of each country be devoted to conservation (10% being the minimum prescribed by IUCN).

4. To use excess animals to start game ranching and therefore supplement protein to rural communities.
5. If animals cannot be used in the above manner, then the excess animals will be culled and the meat used for drought relief.
6. Provision of water by construction of boreholes.
- Construction of catchment dams where feasible.

Cost

1. Capture Unit (Mechanical): includes vehicle with trailer, wire, crates etc.
- 10 units at 70,000 each . 700,000
* Need 10 units, one for each SADCC member and then a mobile extra one for any country in current need.
2. Chemical Unit (darting gear) 9 units requested, one for each country.
- 9 units at 2,000 each 18,000
3. Borehole Pumps and Engines: 5 Units per country, therefore a total of 45 units
- 45 units at 4,000 each 180,000
4. Construction of Watering Holes: 45 holes, or one for each of item No. 3
- 45 holes at 3,000 each 135,000
5. Personnel Training: To provide lessons on operation of capture unit.
 - a. Transportation: 8 countries travelling and 4 representatives per country.
- 8 countries at 4,000 per country 32,000
 - b. Room and Board: 3 weeks of training for 9 countries and 4 per country.
- 9 countries at 6,000 per country 54,000
- * SUB-TOTAL for above equipment and training: 1,119,000
6. There are additional specific projects, and funds requested for each individual country.
 - a. Angola 80,000
No additional project submitted
 - b. Botswana 80,00
No additional project submitted
 - c. Lesotho 100,000
Additional Funds
Reason:
Re-introduction of wildlife from Botswana to Lesotho. Additional funds will be used for purchasing capture, transport and equipment materials for project.

d.	Malawi	
	Additional funds:	108,000
	<u>Reason:</u>	
	Funds for capture, transport, and running costs for translocating Puku from Zambia to Malawi. 22 additional borehole pumps and engines.	
e.	Mozambique	
	Additional funds	120,000
	<u>Reason:</u>	
	Capture and transport of wildlife within the country.	
f.	Swaziland	
	No additional project submitted	80,000
g.	Tanzania	
	No additional project submitted	98,550
h.	Zambia	
	Additional funds	180,000
	<u>Reason:</u>	
	Funds for capture, transport, and running cost for translocating Nyala from Malawi to Zambia. 75 additional boreholes	
i.	Zimbabwe	
	Additional funds	290,000
	<u>Reason:</u>	
	To increase translocating capacity within the country, and 55 additional boreholes	
	* SUB-TOTAL for country specific projects	1,136,550
	*** TOTAL CUMULATIVE PROJECT COST	<u>2,255,550</u>
	* All figures in U.S. Dollars	

Project No. 9.0.4.

- Feasibility Study on the Processing and Marketing of Durable Wildlife Products in the SADCC Region

Introduction

The SADCC Region produces a substantial amount of wildlife products ranging from ivory, skins and a number of parts and derivatives. However, processing and marketing of such products have lagged behind. This has brought about two unfavourable conditions. Firstly, due to lack of processing facilities a good number of countries have had to sell unprocessed, raw products at very low prices, whereas larger sums of revenue could have been realized if fully processed. Other countries have had to throw down the drain and continue to do so, valuable wildlife products because of lack of basic processing facilities. Secondly, the marketing of these wildlife products has not been properly coordinated. This has resulted in a good number of countries not getting substantial returns as they have offered their products at low prices to middle-men.

The main objective of this study is aimed at formulating guidelines for appropriate processing technology and marketing of wildlife products.

Location : All SADCC countries
Presented by : Malawi on behalf of SADCC Countries

Objectives

Produce a feasibility study which identifies these areas of concern:

- a. Identify the range of wildlife products produced now in all SADCC countries.
- b. How products are currently being processed.
- c. How products are currently being marketed - examine different outlets.
- d. Produce strategies on how to improve the current processing and marketing and get maximum returns on products.
- e. Look at current technology for processing and make recommendations on how best to develop this within the SADCC countries.

Cost

For 1 Economist and 1 Wildlife Biologist

A. Consultancy Fees	
Total cost	60,000
B. Airfares	
Ground transport will be provided by host country	
Total Cost	<u>20,000</u>
COST OF PROJECT	<u>80,000</u>

Forestry

FORESTRY

SECTION 1 - INTRODUCTION

1.1 Forestry as an area for co-operation was agreed upon at the Council of Ministers Conference held in Blantyre in November 1984. The Malawi Government was charged with the responsibility of co-ordinating this subsector at the same conference.

1.2 Subsequently Malawi produced, after a tour by two Malawi forestry officials of member countries, a forestry report on the status of forestry, current and future programmes and the likely areas of co-operation. The report was discussed by the Technical Sub-Committee for Forestry at its first meeting held in Blantyre, Malawi, in December, 1983. At this meeting 11 projects were identified and recommended to the Council of Ministers. At its meeting in Lusaka the Council of Ministers approved the projects and the report of the Technical Sub-Committee for Forestry as a programme of work in Forestry. They also directed that Forestry should initially remain as a sub-sector of Agriculture until it is fully established when it will be considered as a separate and independent sector.

1.3 Some of the projects described later in this paper had been fully written up by the Technical Sub-Committee for Forestry at its meeting held in Lilongwe between 27th and 30th of August, 1984. They were subsequently approved by the Agriculture Ministers at their meeting in Maseru on 7th September, 1984.

SECTION 2 - BACKGROUND INFORMATION

2.1 The SADCC Region and Population

The SADCC Region which is comprised of 9 member countries, namely the People's Republic of Angola, The Republic of Botswana, The Kingdom of Lesotho, The Republic of Malawi, The People's Republic of Mozambique, The Kingdom of Swaziland, The United Republic of Tanzania, The Republic of Zambia and The Republic of Zimbabwe is diverse in area, population, resource and ethnic origin. There are some 61,000,000 people (1981) living in the region over an area of 4,800,000 square kilometres. With an estimated average annual population growth (1981) of 2.7% the population could be expected to reach 104,166,000 by the year 2,000.

2.2 Topography and Climate

The region has variable topography and is predominantly of fairly high plateau and rolling plains, which are bounded by narrow coastal strips and intersected in the east-central portion by the Great Rift Valley and Mountains.

The climate varies from tropical to subtropical with a clearly defined dry (May - November) and wet (December - April) seasons and generally with warm to hot summers and cold winters. Some areas have little precipitation which in some cases ultimately recede into desert.

During the past few years the effective amount, distribution, and frequency of rainfall have been so erratic and disappointing that the region has been subject to constant drought.

2.3 Economy

In general the principal livelihood of the people is agriculture with maize, cassava as staples. Cash crops include tobacco, coffee, cotton, maize, sugarcane and livestock. Forestry also plays an important part in the economy of some member countries.

2.4 The Forest and Woodlands

Although the natural vegetation ranges from desert to tropical rain forest the region is predominantly of open woodland, relatively dry savanna and dry wooded slopes. Natural forest areas of a more closed and higher nature are largely limited to an area of moist forest in the northern Angola; forest-savanna mosaics in northern Angola, coastal Tanzania and northern Zambia; mountain or highland areas of a limited nature in Tanzania, Malawi and the area of the Mozambique - Zimbabwe border, river belts and coastal strips in Mozambique; some dry deciduous forest at the Angola - Zambia - Zimbabwe - Botswana borders; and coastal mangroves in Tanzania, Mozambique and the Congo estuary.

The closed forests amount to less than two percent of the land area, but these forests and, in the past quarter of a century, plantations have been the object of most forestry efforts which are predominantly industrially oriented.

The total planted area in the SADCC region was in 1981 estimated to be 716,700 hectares. This includes woodlots and industrial large scale plantations.

The indigenous forests and woodlands are relatively slow growing and have a low biomass mean annual increment while plantations are mainly composed of fast growing species. Both these types provide innumerable goods and services to the population such as serving a primarily protective function in the catchments and steep land areas and as sources of primary forest products, especially timber, building poles, fuelwood, fodder, edible fruits and minor forest produce. The

localised shortage or scarcity of wood products such as fuelwood in urban centres and heavily populated rural areas have been recognised in a number of member states.

Forest land and forest resources are under increasingly severe pressure from the growing population, agricultural expansion, shifting cultivation, settlements, overgrazing, uncontrolled bush fires, indiscriminate tree cutting etc. In general the situation is getting severe. The sources of wood for domestic use as firewood and building poles, for tobacco curing and for general industrial construction are receding due to demand exceeding sustainable supply potential. Wood and wood products have to come from an economic haulage distances. More time is wasted in gathering wood by families for domestic use than it can usefully be used for other productive family chores and enterprises.

Woody vegetation cover is deteriorating rapidly resulting in intensified soil erosion, seasonal flooding and siltation. Damage to soil and water stability are making agricultural production more difficult in many areas. The threat of desertification is sometimes present.

SECTION 3 - PROGRAMMES OF WORK

3.1 The member Governments have recognised the gravity of the situation and have therefore embarked upon the development programmes for forestry which are a mixture of ongoing work and new investments in Forests and forest industries. Through pursuance of sound forestry policies these programmes have taken various forms which are summarised below:

3.2 Protection, Control and Management of Forests and Woodlands

Some SADC member states still have relatively extensive areas of natural forests and woodlands which are in varying degrees of deforestation, exploitation, ecological degradation and regeneration. Governments are slowly taking some form of measure or another to redress the situation. More woodland areas are legally constituted and are therefore legally controlled and protected. However, in general these areas lack appropriate management practices although exploitation is usually under licence and contract agreements. For unconstituted woodland areas, control is generally still difficult nevertheless campaigns are made in order to make the people aware of the need for the conservation, protection and proper control of such woodland areas. Categories of forest areas are given in Table I below.

Table I

Total Land Area, Forest Area, Forest Estate
and Planted Forests in S.A.D.C.C. Member States (1981)

Name of Country	Total Land Area(sq.km)	Total Forest Area(sq.km)	Forest Estate (sq.km)	Planted Forest Area (ha)
Angola	1,246,100	1,161,000	17,597	260,000
Botswana	562,000	N.A.	4,146	107
Lesotho	30,355	N.A.	NILL	3,600
Malawi	94,276	36,151	7,483*	90,236
Mozambique	801,590	190,000	N.Ap.	31,195
Swaziland	17,364	1,776	NIL	101,500
Tanzania	887,000	440,000	133,551	70,000
Zambia	752,612	411,390	74,307	51,200
Zimbabwe	390,759	311,705	9,084	108,900
TOTAL	4,782,056	2,552,022	246,168	716,738

N.Ap = Not Applicable

N.A. = Not Available

* Exclude 220 sq.km. of ungazetted forest reserves.

Planted Forest area includes large scale plantations and woodlots.

3.3 Establishment, Management and Development of Plantations

All SADCC member states are involved in programmes aimed at establishing, managing and developing plantations of the relatively fast growing exotic tree species for utility timber, pulpwood, fuelwood and poles while in some cases the establishment of indigenous tree species are also carried out.

Wood supplies 70 percent of energy consumed in the region. It will for sometime in future remain the important source of energy for the greater percentage of the population. In view of this requirement countries are establishing fuelwood plantations either by Governments, private organisations as large scale fuelwood plantations or by small-holder farmers establishing farm and village woodlots. There are large donor funded projects in countries for this purpose in countries such as Malawi, Lesotho, Zimbabwe, Tanzania and Zambia.

Total planted area in the region is 746,700 hectares as shown in the Table I above and Table II below.

Table II
Planted Area by Country and Main Species

Country	Planted Forest Area (ha)	Main Tree Species
Angola	36,000	Lycpress, Eucalypts, Pines
Botswana	107	Eucalypts
Benin	3,600	Eucalypts
Malawi	90,236	Pines, Eucalypts, Gmelina
Mozambique	31,195	Pines, Eucalypts, indigenous species
Swaziland	101,500	Pines, Eucalypts
Tanzania	70,000	Pines, Eucalypts
Zambia	51,200	Pines, Eucalypts
Zimbabwe	108,900	Eucalypts, Pines

3.4 Forest Extension and Publicity

Most of the member states until recently concentrated on industrial plantations for the production of sawn timber and pulpwood. Little attention was paid to the establishment and conservation of forests for supply of energy. In recent years, however, with the increased deforestation and scarce supply and soaring prices of fossil fuels there is considerable awareness for the provision of fuelwood as the cheapest source of energy for the majority of people. Accordingly some member countries have programmes which lead to the protection of indigenous forests and the establishment of fuelwood plantations. For instance in Malawi and Zimbabwe there are World Bank assisted wood energy projects while in Lesotho there is a Woodlot Project for the establishment of fuelwood plantations, encouragement of the masses and smallholder farmers to establish their own woodlots.

The encouragement of the masses is done through free issue of sales and distribution of tree seedlings raised in nurseries, the distribution of wall charts, posters and booklets and handouts, the giving of public lectures to schools, farmers, interested groups, press

release and radio broadcasts, newspaper stories, cinema shows, fire protection campaign, and participation in agricultural and other exhibitions. Most countries have set aside and observe with special tree planting ceremonies a special day or week in a year, for example, National Tree Planting Day, or World Forestry Day, Arbor week or Nature Conservation week for promoting Forestry. Due to such encouragement, the necessity for participation in tree planting by the communities particularly in rural areas is being appreciated.

3.5 Wood Based Industries and Trade

The wood based industry in general is small but a relatively expanding industrial activity in terms of gross output value and is dominated by many small to relatively medium sized sawmills and there are also a few plants for wood based panel products, charcoaling, pole preservation, railway sleeper production, pulp and paper. A number of these sawmills and panel mills exist in Angola, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe. Their raw material sources are based in some countries on both natural forests and plantations while others such as Malawi and Swaziland are entirely based on plantations.

In a majority of cases the products are mostly for domestic consumption while a small quantity in the region as a whole is exported. The flow of trade within the member countries is also low. This is hampered mostly by poor communication links among the member countries.

SECTION 4 - FUTURE STRATEGY AND SADCC CO-OPERATION

4.1 As described in the preceeding paragraph each member country has its own development programmes which are being pursued in order that forestry may contribute to the economic and social welfare of the respective country. The forest activities therefore vary considerably from country to country and they are at different levels of development. Malawi, Swaziland, Tanzania, Zambia and Zimbabwe have developed silvicultural techniques and produce large quantities of sawn timber and wood based products. Angola and Mozambique have relatively abundant supplies of indigenous hardwood which could be exported to countries which are deficient in this resource. Malawi, Swaziland and Zimbabwe for instance have surplus softwood timber which can be exported while the remaining countries are still trying to meet their internal demand. Some production figures are shown in the table III below.

In order to assess the real potential of the interaction among the member countries urgent surveys of both the resource and the market is required in the SADCC region. Indeed this should not be done in isolation from the appraisal of transportation and communication systems.

Although there are programmes in social forestry underway in some countries, the pace is slow and as such the gap between demand and supply is still widening. Real aggressive programmes are required if the situation is to improve.

As in all other sectors, there is also need for co-ordinated effort in the Forestry sub-sector in order to achieve the goals and objectives for forestry development. A number of areas have already been identified for possible co-operation and co-ordination and which together with the project proposals have already been approved by the Council of Ministers as part of the Forestry programmes. These are summaries here below.

4.2	<u>Possible Areas of Common Co-operation and Co-ordination</u>	<u>Recommendations for Action</u>
4.2.1	Forestry Education and Training	Existing facilities be strengthened. Co-ordination and Co-operation be promoted. Avoid duplication of effort and wastage of limited resources. Grateful of FAO/Italian offer recommends acceptance, high priority and immediate implementation of Regional Training Centre for Forest Industries.
4.2.2	Joint Protection, Usage and Management of Common Catchment Areas and of Forest Plantations along International Boundaries	Agreement be signed by SADCC Member Countries to authorise direct day-to-day cross border contacts between responsible field forestry staff for collaboration in protecting trees from fire, pests, diseases and animals.
4.2.3	Production and Distribution of Forest Tree Seeds	Regional Tree Seed Centre should be established in a member country to co-ordinate seed collection and distribution; setting of common grading standards on testing, storage and phytosanitary requirements (see Project 4).

- | | | |
|--------|---|--|
| 4.2.4 | Forest, Wood and Wood Products Industries | Member countries institute and maintain technological exchange and sharing; seek, through co-ordinated efforts, technical assistance and funding for this. |
| 4.2.5 | Forest, Wood and Wood Products Trade | Regular production and trade statistics be commissioned, to match deficit/surplus situations and encourage trade (see Project 8 and 9). |
| 4.2.6 | Regional Forest Inventory | Regional project on forest inventory and monitoring to provide resource base data enabling efficient utilization (see Project 2). |
| 4.2.7 | Standardisation and Specification of Forest Products and Phytosanitary Requirements | Development/adoption and practice of common standards, grading rules, codes of practices and phytosanitary regulations (see Project 8). |
| 4.2.8 | Forestry Extension and Farm Forestry | Study tours and effective dissemination of information be encouraged in approach to rural forestry. |
| 4.2.9 | Forestry Research | Co-operation and co-ordination in exchange and dissemination of forest research information; study tours, visits; avoid project duplication (see Project 7). |
| 4.2.10 | Forestry Data Bank and Processing Unit | Prefeasibility study required to establish need for regional forestry data processing unit. |
| 4.2.11 | Technical Assistance | Exchange of technology (including personnel and equipment) be encouraged inter-regionally and when necessary extraregionally (see Projects 6, 7, 9) |

4.3 SADCC Forestry Project Proposals, Identified and Approved in Principle:

1. Establishment of a Regional Training Centre for Forest Industries.
2. Forest Inventory Project for the SADCC Region.
3. Establishment of a Regional Tree Seed Centre.

4. Expansion and Strengthening of Existing Forestry Colleges in SADC Member States based on Manpower Needs.
5. Prefeasibility Study for the creation of a Regional Data Bank and Processing Unit.
6. Forestry Technical Consultation Project to facilitate short-term study tours and exchange of personnel within the SADC Region.
7. Technical Assistance Project for strengthening Forestry and Wood Products Research and Dissemination of Research Information.
8. Development of Common Regional Standards for Wood and Wood Products and other Forest Produce.
9. Technical Assistance Project for a Regional Study and monitoring system on Wood Products Trade and Trade Statistics.
10. Forestry Manpower Survey Project for the SADC Region.
11. Project to create a Regional Library and to produce Text Books of relevance to the Region.

SECTION 5 - PROJECT SUMMARIES

5.1 From the possible areas of co-operation and co-ordination and project proposals set out in paragraphs 4.2 and 4.3 above, some projects have been written up and have already been approved by the Agriculture Ministers at their meeting in Maseru on 7th September, 1984. These projects are appended hereto but are summarised as follows:

5.2 Project No. 6.0.1

Project Title: Special Facility for SADC
Forestry Project Development

The Malawi Government has been given the responsibility of co-ordinating the Forestry Sector. For Malawi to carry out this role efficiently, a special and appropriate administrative unit will be needed and also financial and technical support will be required. In this connection the Canadian International Development Agency (CIDA) has already shown interest to give support. CIDA is already discussing with the Malawi Government and a project proposal has already been produced by CIDA in consultation with the Malawi Government. The estimated cost is: by donor-Canadian Dollar 2,407,500 and local contribution is estimated as Malawi Kwacha 605,400.

5.3 Project No. 6.0.2

Project Title: The Establishment of a SADC
Regional Herbarium and
Conservation of Endangered
Species Study

The aim of the project will be:

- (a) To collate existing information on herbaria and botanical collection within the region.
- (b) To organise field collections of botanical material in those areas of the region which are poorly represented in herbaria.
- (c) To identify indigenous species which are becoming endangered due to deforestation and establish botanical reserves where their germplasm can be conserved.
- (d) To investigate the need for the establishment of a regional herbarium to provide a

reference collection of botanical material for the Region as a whole and to assist those member states who are unable at present to maintain an adequate National Herbarium.

It is proposed that a study to look into the establishment of such a herbarium will have to be mounted by a three man team drawn from existing herbaria within the region and terms of reference have been prepared. The estimated cost is US\$1,726,694. Consultants should attempt to combine with Project No. 6.0.5.

5.4 Project No. 6.4.3

Project Title: Urban Fuelwood Project

The purpose of the project is to try to provide fuelwood services and fuelwood reserves to urban centres which are in very critical need for this cheap source of energy. This will include establishment of fuelwood plantations and protection of existing natural forests where possible.

It will in the first instance be established in Malawi, Mozambique and Tanzania. There is close liaison with the Energy sector and the documentation relating to the Malawi and Tanzania projects can be found in the Energy Sector report to the Conference.

5.5 Project No. 6.5.4

Project Title: Regional Forest Inventory Project

The immediate objectives are:

- (a) the identification and coordination of effective indigenous forest management inventory system(s) for the region.
- (b) the provision of technical assistance, training and equipment to enable member countries to undertake their forest inventory needs.
- (c) to provide adequate information and maps that will enable SADC countries to monitor the rate of deforestation in the region on a continuing basis.

While the main centre will be Maputo, Mozambique, for the more big and intricate jobs in the region, countries such as Malawi will also need to strengthen the small existing units, while others will need to or establish new small ones for light jobs within the respective countries.

Some countries such as Zambia will require the Inventory itself. The estimated cost is U.S. \$6,072,700.

5.6 Project No. 6.0.5

Project Title: Regional Seed Centre

The main objective of the centre will be:

To assist participating member countries to secure their forest tree seed supplies and requirements by providing authenticated, certified collection by seed (or vegetative propagation material) for research and development.

Sub-projects should also be considered for countries such as Mozambique which need to establish seed storage units for the national use. The estimated cost US \$1,259,000. Attempt should be made to combine this project with Project No. 6.0.2.

5.7 Project No. 6.0.6

Project Title: Dry Zone and High Altitude
Fuelwood Trials

The objectives are:

- (a) To identify tree species and provenances suitable for growing in dry and high altitude silvicultural zones of member states.
- (b) to assist in the establishment of woodlots and agroforestry plots on smallholder lands and of large scale fuelwood plantations.

These trials will assist in determining species for dry areas and developing management techniques for them. All interested countries will participate in these trials. For this project, there is need for liaison with the energy sector which is undertaking related projects. The estimated cost is US \$381,540.

5.8 Project No. 6.4.7

Project Title: Forestry Technical
Consultation Project

The objectives are:

The objectives of the project are to advance knowledge through exchange of personnel, technical information and skills by frequent inter-member country visits, regional workshops and seminars and to update the forestry sector report.

It is hoped that through constant inter-action by member countries exchange of information and experience may be achieved. The estimated cost is US \$867,576.

5.9 Project No. 6.0.8

Project Title: Forestry Industries Training
Centre for SADCC Countries (FITC)

Objectives of the Project are:

The long-term objective of the Project is to contribute to the economic and social development of SADCC countries through the improvement of the productivity and quality of production of their forest industries.

The immediate objective include:

- The establishment of a Forest Industries Training Centre for SADCC countries, consisting of production plants, workshops lecture rooms, dormitories and social facilities.
- Training technicians and trainers of skilled workers for primary mechanical forest industries.

The funding of this project has already been offered by the Italian Government through FAO. The FAO formulation mission has already undertaken the studies by touring all the SADCC countries and the report has been produced and distributed to member countries. The mission recommends the location of FITC in Zimbabwe and the estimated costs are: by donor US \$608,300 while contribution by the host is estimated to be ZRD1,283,400.

SECTION 6 - PROJECT DOCUMENTATION

PROJECT SPECIAL FACILITY FOR SADCC FORESTRY DEVELOPMENT
(This project is being considered by CIDA for funding offer. This is therefore an extract from the CIDA Mission's report, on CANADA/SADCC/MALAWI CO-OPERATION IN FORESTRY of June 1984.

RECIPIENT Southern African Development Coordination Conference (SADCC) through Department of Forestry, Ministry of Forestry and Natural Resources, Government of Malawi acting as Regional Co-ordinator for the Forestry Sector.

PROJECT NO. 6.0.1

The proposed project supplies,

- (1) through consulting services, temporary high level expertise, as well as a full-time advisor
- (2) equipment and
- (3) other facilities to strengthen the Malawi Department of Forestry, in its role of providing co-ordination leadership for the SADCC countries in the forestry sector.

Duration is planned for five years with a tentative starting date of April 1, 1985. The proposed budget is approximately 3 million dollars (Cdn).

PURPOSE:

To assist SADCC in the identification, appraisal and development of regional forestry projects and in other co-operative activities within the sector with the long term aim of increasing the output of forest products for the people of the region while maintaining the environmental benefits of the forest.

OBJECTIVES:

The immediate objectives of the project are to assist:

1. in establishing an organization and operational framework for effective regional co-operation,
2. the Government of Malawi, in its role as co-ordinator in the forestry sector of the SADCC countries, and the SADCC member states generally, in assessing opportunities for co-operation and in designing a co-ordinated programme,

3. in identifying, preparing, appraising and monitoring specific co-operative projects,
4. SADCC, in its efforts to secure donor support for projects approved by its Council of Ministers,
5. through the provision of other services as required, in relation to these objectives.

INPUTS:

Inputs are enumerated and cost estimated as follows:

1. Contribution of CIDA to project funding.

- A. International Staff (Includes Salary; Inter-Regional Travel for Recruitment, Leave and Repatriation; Consultant Firm Servicing Charges)

(Canadian \$)

Advisor of Forestry Projects	5 years at \$130,000/year	650,000
Advisor on Cost-Benefit Analysis, 4 Visits	2 p.m. at \$20,000/p.m.	40,000
Consultant Specialists on Manpower Surveys; Education; Training; Research; Forest Management; Forest Inventory; Forest Products; Trade Information Services; Data Processing; Extension Services; Standardization	36 p.m. at \$12,200/p.m.	439,200

TOTAL 1,129,200

- B. Equipment and Services for Advisory on Forestry Projects

Vehicles (2, not concurrent)	40,000
Office Equipment	20,300
Housing Rental	90,000
Printing and Information Dissemination	110,000
Other Services (Vehicle Maintenance, Peak period vehicle rental, telex rental, telephone, office supplies and equipment maintenance, temporary secretarial services)	213,000

TOTAL	473,300
C. Travel within SADCC	
(i) Advisor on Forestry Project 4 Mission of 3 months each 3 Sub-Committee Meetings outside Malawi of 1 week each	90,000
(ii) Specialist Consultants 36 p.m. of Mission in Travel	248,000
(iii) SADCC Officers:	
(a) Malawi Counterpart Officer Mission Travel 4 x 3 months	80,000
(b) SADCC specialist Mission Travel 4 x 3 months	80,000
(c) Participants to meetings 9 countries x 2 representative x 5 meetings x 1 week	116,000
(d) SADCC Specialists Discussion on specific projects	50,000
(e) Workshop on Project Development 20 participants x 2 weeks	51,000
TOTAL	715,000
D. Travel of SADCC Specialists to potential donor countries, encouraging support of specific project proposals 15 person - trips	90,000
TOTAL DONOR CONTRIBUTION	\$2,407,500

Distribution over project period

Canadian \$	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	718,900	748,600	406,000	288,000	246,000	2,407,500

2. Contribution of Malawi Government to Project funding

Malawi Kwacha

A. Counterpart Staff Salary	.
Forestry Officer (P.5)	K 7960/year
Forestry Officer (P.7)	K 7250/year
Personal Secretary	K 4500/year
Clerical Officer	K 1500/year
Messenger	K 650/year
Driver	K 1000/year

Watchman	K 500/year	
TOTAL	K23360 x 5 years	116,800
B. Buildings		
(Including costs of land and construction)		
Housing		
2 x B2 houses at K80,000	K 160,000	
1 x DH house	K 52,500	
1 x EH8 house	K 26,500	
1 x CLASS F (double family)	K 39,600	276,600
Office Block (6 rooms + toilets)		70,000
Plot Charges		25,000
TOTAL		373,600
C. Operating Costs		
Building Operation and Maintenance	K 18,000 (Annually)	90,000
Local Transportation of Conterpart Officers	K 5,000 (Annually)	25,000
TOTAL MALAWI GOVERNMENT CONTRIBUTION		605,400

Distribution over the

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
419,960	46,360	46,360	46,360	46,360	605,400

The total project cost is in the order of \$3 million Canadian.

These estimates include no allowance for inflation, estimate at approximately 6% annually for foreign exchange and 20% annually for local currency. No contingency allowance has yet been estimated.

As Canadian dollars and Malawian Kwacha are currently of approximately equal value, currencies may be added to give approximate costs in either dollars or Kwacha. This gives a total project cost of about 3 million dollars or million Kwacha.

PLANNED OUTPUTS:

1. Establishment of a Forestry Technical Unit in the Department of Forestry, Malawi, to service SADCC's Technical Sub-Committee for Forestry and to provide leadership in co-ordinating co-operative activities within the SADCC forestry sector.
2. Feasibility studies for SADCC forestry projects including project design and follow-up project implementation. Establishment of one or more projects in each of the areas already selected by SADCC for co-operative effort.
3. Annual meetings of the Technical Sub-Committee for Forestry in SADCC.
4. Two or more specialized ad hoc meetings of that body, to co-ordinate specific subject matter areas.
5. Effective participation in meeting of the Council of Ministers of SADCC.
6. Effective participation in specialized meetings of related sectors.
7. Quarterly newsletters on progress in, and promotion of, co-operative activities and project proposals.
8. Workshop report on project identification, formulation, appraisal and monitoring.
9. In-service training of counterpart officers. (Malawi and other SADCC countries).
10. Project Inspection Reports.

PROJECT : THE ESTABLISHMENT OF A SADCC
REGIONAL HERBARIUM AND
CONSERVATION OF ENDANGERED
SPECIES

LOCATION : ALL SADCC MEMBER STATES
(SITE OF HERBARIUM TO BE
DETERMINED)

PRESENTED BY : SADCC FORESTRY SECTOR

COST : U.S. \$1,726,694

DURATION : 5 YEARS

SADCC PROJECT NO. : 6.0.2

SUMMARY

The objectives of the project are:

1. To collate existing information on herbaria and botanical collections within the Region.
2. To organise field collections of botanical material in those areas of the Region which are poorly represented in herbaria.
3. To identify indigenous species which are becoming endangered due to deforestation and to establish botanical reserves where their germplasm can be conserved.
4. To investigate the need for the establishment of a regional herbarium to provide a reference collection of botanical material for the Region as a whole and to assist those member states who are unable at present to maintain an adequate National Herbarium.

INTRODUCTION

The range of indigenous plant species within the SADCC Region is vast but not all member states have adequate herbaria and general information on the taxonomy of some areas is sparse. Deforestation is taking place in many of these areas at alarming rates and several species are becoming in danger of extinction. The SADCC Forestry Sector Technical Sub-Committee, recognising the vital role played by indigenous flora in the lives of the rural population of the Region, recommend implementation of the following proposals in order to increase the general store of knowledge of the botany and to prevent the extinction of endangered species.

PROPOSALS

1. A three man team, drawn from existing herbaria within the Region, should visit each member state to examine existing botanical collections and related literature, to visit areas which are poorly represented in collections and to inspect areas where species are becoming endangered.

Terms of reference for the herbarium team:-

1. To visit each member state and examine existing botanical collections.
 2. To identify those areas of the Region's flora which are poorly represented in collections and to advise on additional collection.
 3. To advise member states and the Sub-Committee which are in danger of extinction.
 4. To advise member states and the Sub-Committee of sites suitable for the conservation of endangered species.
 5. To undertake as much essential collection work as possible during the tour.
 6. To advise member states and the Sub-Committee of any changes needed in the organisation of herbaria in the Region.
 7. To report to the Sub-Committee on completion of the tour on the above items and giving recommendations for further work.
2. Each member state will, on advice from the Sub-Committee, establish botanical reserves for the conservation of endangered species, for the long term benefit of the Region as a whole. The steps involved are:-
 1. Identification of suitable sites.
 2. Surveying and demarcation of boundaries.
 3. Establishment of the species concerned.
 4. Protection and maintenance of the reserve.
 3. A Regional Herbarium will be established within the Region at a site to be decided by the Sub-Committee. The objectives of the herbarium shall be:-
 1. To provide a Regional centre for the assemblage, curation and classification of the flora of all member states.

2. To provide a plant identification service for the Region as a whole, and particularly for those member states with limited facilities of their own.
3. To act as a Regional authority on all matters relating to botanical taxonomy and to act as an educational and research body.
4. To act as a focal point for the conservation of all aspects of the Region's flora.
5. To participate in and contribute to relevant Regional and international botanical and scientific activities.
6. To provide botanical specimens to schools, colleges and universities and to provide occasional lectures when appropriate.

COSTS

Herbarium Team's tour

Air fares	\$ 18,000
Hotel & Subsistence	\$ 54,000
Internal travel (local contribution)	\$ 15,000
Salaries (local contribution)	\$ 5,000
Specimen air freight	\$ 5,000
Contingencies	\$ 18,800
	<hr/>
	\$112,800

Botanical Reserves - $\frac{3}{100}$ sites per country = 27 sites at 100 ha average = 2,700 ha

Surveying)	U.S. \$15,00
Demarcation)	
Protection	U.S. \$27,00
Visits by herbarium staff	\$ 6,000
Contingencies	\$ 1,200
Total	<hr/>
	\$ 49,200

Regional Herbarium

Building ($1000m^2$) + equipment	\$150,000
Staff:	
1 x Senior professional officers	\$120,000

6 x Technical Officers	\$284,635	
2 x Professional Officers	\$141,875	
12 x Technical Assistants	\$265,065	
1 x Executive Officer	\$ 47,440	
2 x Clerical Officers	\$ 43,345	
2 x Typists	\$ 43,345	
1 x Driver	\$ 7,905	
2 x Messenger/Cleaner	\$ 30,240	
2 x Security Guards	\$ 19,405	
Vehicle (1 x LWB 10 seater Landrover and small car)	\$ 25,000	and
	\$ 15,000	
Air fares (3 x Officers)	\$ 30,000	
Internal Travel	\$ 6,000	
Specimen freight \$4,500/year x 5 years	\$ 22,500	
Contingencies (25%)	\$312,939	
	<u>1,564,694</u>	

Grand Total Cost \$1,726,694

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PROJECT : URBAN FUELWOOD PROJECT
LOCATION : MALAWI/MOZAMBIQUE/TANZANIA
PRESENTED BY : SADCC FORESTRY SECTOR
COST : MOZAMBIQUE U.S. \$6,540,520
MALAWI*
TANZANIA*

DURATION : 5 YEARS WITH PROVISION FOR
EXTENSION THEREAFTER

SADCC PROJECT NO. : 6.4.3

INTRODUCTION

The SADCC countries have some 2,934,000 sq. km. of forest land, about 61% of the total land surface area, which is predominantly savanna woodland and some closed forest. The area of plantations and woodlots was 782,800 hectares in 1981. The forests presently provide some 75 million m³ of fuelwood, 2 million m³ of wood for industry, and 3 million m³ of unprocessed round.

The SADCC Forestry Sector Technical Sub-Committee recognises that fuelwood is the major source of domestic energy for the majority of citizens in member states. In 1981, 17% of the Region's 61,237,000 inhabitants lived in urban areas, where the concentration of population has led to rapid depletion of the indigenous woodland around cities and large townships. The area of depletion of forests around such urban centres is rapidly increasing resulting not only in increased fuelwood costs to the urban dwellers but also in great environmental damage to the cut over areas.

The Sub-Committee therefore recommends that the Council of Ministers seek donor support to establish fuelwood plantations and protective forest cover around critical urban centres and to encourage the use of fuel saving stoves and alternative fuels where available. Other SADCC countries with similar problems have been invited by the Technical Sub-Committee to prepare individual country projects for the Council's approved along similar lines as this project.

* Documentation relating to these two projects can be found in the Energy Sector report for the Conference.

BACKGROUND: MOZAMBIQUE

The vast majority of the people of Mozambique depend on woodfuel to meet their energy requirements for cooking and for heating purposes. The capita demand has been estimated at 1.5 m³ per annum and with a population of over 12 million people, the national consumption of this commodity is estimated at nearly 18 million cubic metres a year.

The supply situation has become critical in and around a number of urban centres due to indiscriminate cutting of trees over the years, widespread uncontrolled bush fires and a general process of soil deterioration due to population pressures and the system of shifting cultivation. The population has to spend long hours and physical energy in searching for fuelwood. This problem is further aggravated by the fact that the social and economic benefits which the forest used to contribute in the form of shelter, edible fruits, fodder, building timber and protection for agricultural crops is no longer available or is considerably reduced.

It was against this background that the Government of Mozambique in 1978 initiated a fuelwood plantation project for the critical capital city of Maputo with a target of 24,000 hectares over a six year period. Less than 10% of this ambitious target has been achieved due to a number of problems. These included the abnormally low rainfall and severe droughts during the period, bad choice of species and a general lack of experience in managing projects of that size. With technical assistance from the Food and Agriculture Organisation and other national and International Agencies, species and provenance trials were organised and have confirmed that certain selected provenances of Eucalyptus camaldulensis and E. tereticornis can be planted successfully and these will be used in the new project.

The Government of Mozambique is satisfied that with further technical assistance and staff support, specialised equipment and finance, the project will help to resolve the pressing fuelwood problems now facing the population of Maputo.

OBJECTIVES AND TARGETS

The main objective is to effectively reduce the gap between the demand and the availability of woodfuel for the people of the urban centre of Maputo. This involves:-

- (a) The establishment, maintenance and utilisation of 7,500 hectares of fuelwood plantations on available land in the Maputo province over five year period.

- (b) The establishment of 2,500 hectares of woodfuel and multi-purpose trees on land in the rural communities surrounding Maputo.
- (c) The introduction and establishment of modern charcoal units in existing fuelwood plantation areas to encourage production for the Urban Centres.
- (d) The study of improved stoves and cooking methods to demonstrate fuel saving methods.
- (e) Training of staff and people in rural communities in social forestry.

Execution and Supervision

This sub-project will be executed by the Forestry Directorate of Mozambique with the assistance of Regionally recruited experts who will be counterparted by young Mozambique graduates.

Cost Estimate

The sub-project is estimated to cost U.S. \$4,740,000 and summary of costs is given as Attachment II.

ATTACHMENT II

ESTIMATED COST OF MAPUTA CITY FUELWOOD SUB-PROJECT

ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
<u>BUILDINGS</u>						
Houses	400,000	400,000	40,000	40,000	-	880,000
Offices/Stores	70,000	10,	-	-	-	80,000
<u>ROADS</u>	20,000	40,000	40,000	40,000	20,000	
<u>PERSONAL EMOLUMENTS</u>						
Salaries and Wages	50,000	500,000	450,000	550,000	500,000	1,950,000
Regional Recruits	50,000	50,000	50,000	45,000	35,000	230,000
<u>OTHER CONSTRUCTION</u>						
Nursery	15,000	12,000	-	-	-	27,000
Fire Towers	-	-	4,000	-	-	4,000
Canteen	-	20,000	-	-	-	20,000
<u>SEED PURCHASE</u>	12,000	12,000	14,000	14,000	14,000	66,000
<u>VEHICLES</u>						
4 Wheel Drive Jeeps	50,000	-	-	-	-	50,000
Motor Cycles	15,000	15,000	-	-	-	30,000
7-ton Lorries/Trailer	70,000	-	-	-	-	70,000
Tractors	50,000	-	-	-	-	50,000
<u>SPARE PARTS AND LUBRICATION</u>	20,000	30,000	30,000	40,000	40,000	160,000
<u>MAINTENANCE AND RUNNING EXPENSES</u>	100,000	120,000	150,000	200,000	100,000	770,000
<u>EXTENSION AND TRAINING</u>	20,000	24,000	50,000	20,000	10,000	124,000
<u>TOTAL</u>	1,024,000	1,050,000	795,000	850,000	640,000	4,740,000

ATTACHMENT III

FINANCIAL SUMMARY FOR URBAN FUELWOOD PROJECT

(U.S. \$)

ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
<u>BUILDINGS</u>						
Houses	988,500	894,200	82,300	10,900	15,400	1,881,200
Offices/Stores	147,000	10,000	-	-	-	157,000
<u>WATER SUPPLIES</u>						
ELECTRICITY	40,700	1,100	1,250	1,550	1,770	52,550
	20,350	2,100	1,450	2,780	3,220	30,900
<u>ROADS AND BRIDGES</u>	44,500	74,250	82,000	92,500	60,200	353,450
<u>OTHER CONSTRUCTION</u>						
Wood Sales Sheds	21,000	500	500	500	700	24,200
Nursery Establishment	16,000	15,500	1,080	1,120	1,200	35,900
Fire Towers	-	5,600	4,580	770	840	11,790
Canteen	-	26,000	-	-	-	26,000
<u>PLANT AND VEHICLES</u>						
4 Wheel Drive Vehicles	150,750	-	-	-	-	150,750
Motor Cycles	34,900	41,200	-	-	-	76,100
Saloon Car	12,600	-	-	-	-	12,600
7-Ton Lorries	154,000	-	-	-	-	154,000
Tractors and Trailers	164,000	-	-	-	-	164,000
Push Bikes	-	1,700	-	-	-	1,700
<u>PERSONAL EMOLUMENTS</u>						
Salaries and Wages	129,500	725,400	960,450	1,162,550	1,335,040	4,314,275
Regional Recruits	60,000	60,000	65,000	65,000	65,000	315,000
Maintenance & Running Expenses	245,300	313,400	377,900	838,050	485,450	1,881,100
<u>OTHER EQUIPMENT SPECIAL EXPENDITURE</u>	28,300	50,900	69,000	70,100	31,000	249,300
Extension and Training	41,000	48,500	58,000	55,000	45,000	247,500
Surveys	3,500	-	-	-	-	3,500
Materials	12,000	250,000	274,750	294,000	322,000	1,152,750
TOTAL	2,257,900	2,529,740	1,909,210	2,221,780	2,361,390	11,280,520

SADCC FORESTRY INVENTORY PROJECT

PROJECT	REGIONAL FOREST INVENTORY PROJECT.
LOCATION	MOZAMBIQUE, MALAWI, ZAMBIA.
OBJECTIVES	(SEE PAGE 155)
SADCC PROJECT NO.	6.54
TOTAL ESTIMATED COST.	U.S. \$4,150,000 MOZAMBIQUE U.S. \$1,052,700 MALAWI U.S. \$ 280,000 ZAMBIA <u>\$5,072,700</u> TOTAL

BACKGROUND AND JUSTIFICATION

An appraisal of the stocking, species composition and size distribution of forest stands is the basis for planning the proper management and utilisation of existing forest resources. Most of the SADCC countries do not have sufficient information of this nature, particularly with respect to the indigenous forest and therefore are unable to use their forest resources in an efficient manner.

The indigenous forests and woodland areas of the region amount to about 2,934,022 square kilometres and are slow growing with a relatively low biomass mean annual increment. They provide many valuable goods and services for the vast majority of the population, most of whom live in rural areas. These include primary forest products such as timber, building poles, fuelwood, fodder, edible fruits and minor forest produce. They also play a major role in protecting the catchment areas which are the main sources of the water supplies of the region. Unfortunately, this forest resource has been indiscriminately destroyed and what remains has been disappearing at an alarming rate due to severe pressure from the growing population, agricultural expansion, shifting cultivation, settlements, uncontrolled grazing, fires and indiscriminate tree cutting. Everywhere there is evidence of widespread deforestation, in many instances so severe that once productive land can no longer sustain agricultural or tree crops, leading in some cases to a threat of desertification.

Member nations of SADCC have recognised the gravity of the situation and have initiated large scale reforestation schemes to provide alternative sources of raw material and to relieve the pressure on remaining forests. Where commercially large areas of native forests still exist, for example in Angola and Mozambique the immediate need is to organise the early assessment of these resources in order

that their development can proceed in an orderly and timely manner without detriment to their composition and survival. This work is of particular importance and relevance for those countries which share common boundaries and therefore have an interdependence on the proper management of adjoining forest lands and catchment areas that influence stream flow and water resources. Neighbouring countries with adjacent national parks and wild-life sanctuaries are also particularly affected.

The situation has to be seen against the background of the recent annual drought in the region on the one hand and the pressure on some countries to earn valuable foreign exchange in the short term from existing indigenous forests without due consideration of the ecological impact this could have on the particular country as a whole.

The Regional Forest Inventory Project is one of the proposals approved by the SADCC Council of Ministers for early implementation and aims, among other things at providing technical assistance; training, staff support and equipment to enable member countries to undertake their forest inventory needs as early as possible.

OBJECTIVES OF THE PROJECT

The long-term objectives of the Project is to contribute to the economic and social development of SADCC countries through the improvement of technical information concerning the forest resources of the region with emphasis on the size, location, species composition and growth of indigenous species and to provide a mechanism for monitoring the rate of deforestation.

The immediate objective include:-

- the identification and coordination of effective indigenous forest management inventory system(s) for the region.
- the provision of technical assistance, training and equipment to enable member countries to undertake their forest inventory needs.
- to provide adequate information and maps that will enable SADCC countries to monitor the rate of deforestation in the region on a continuing basis.

1. LOCATION

Mozambique is the recommended host country. It has the second largest natural forest resource in the region, comprising 600,000 ha with forests of high productive potential, 4,000,000 ha with forests of medium productive potential, 15,000,000 ha with low productive potential and

37,000,000 ha of land suitable for reforestation of which about 40,000 ha has already been planted.

During the past 6 years, Mozambique, with the assistance of International Agencies and consulting firms has gained some experience in the planning and execution of forest inventory projects. A nation-wide inventory of the forest resources using Landsat imagery was carried out in 1980 to delineate and classify the forest. Following this work, a detailed inventory over 1.5 and 1.4 million hectares in the Provinces of Niassa and Cabo Delgado, respectively was carried out using aerial photography, photo-interpretation, mapping and field data collection. In addition, a forest inventory of 2.5 million hectares in the Province of Zambezia is under execution. Aerial photography and photo-interpretation has already been completed and the field data collection will be executed during the dry season of 1985.

Mozambique frontier adjoins 4 of the SADC member countries, namely Tanzania, Zimbabwe, Malawi, Swaziland and therefore a coordinated inventory system for the surrounding territory would considerably benefit these countries in the management and control of the development and future use of the water resources of the 5 nations involved.

SUMMARY OF COSTS (1985 - 88)

<u>ACTIVITY</u>	<u>U.S. \$</u>
1. Personnel	940,000
2. Official Duty Travel	60,000
3. Contractual Services	1,400,000
4. Operating Expenses	120,000
5. Supplies and Materials	350,000
6. Equipment	800,000
7. Training	460,000
	<u>4,130,000</u>

DETAILS OF PROJECT COSTS

1	<u>PERSONNEL</u>	M/M	US \$/Year	US \$
	Project Manager	48	60,000	240,000
	Inventory Team Leaders	36	90,000	270,000
	Photo-interpretation	36	40,000	120,000
	Mapping	36	40,000	120,000

Senior Secretary	48	9,500	38,000
Bilingual Secretary (Interpreter)	48	8,000	<u>32,000</u>
			940,000

2. OFFICIAL DUTY TRAVEL

This involves travel of Project Staff within the region. Allowance is also made to enable visits to be made outside the region to select the purchase of equipment and for contractual obligations.....US\$60,000.

3. CONTRACTUAL SERVICES

It is anticipated that the aerial photography and some of the mapping will be undertaken by contract.

Aerial photography	US\$	800,000
Mapping services	US\$	<u>600,000</u>
	US\$	1,400,000

4. OPERATING EXPENSES

Telephone, Telex, car maintenance, gasoline, lubricants etc..... US\$120,000

5. SUPPLIES AND MATERIALS

Office supplies, stationery, photographic film and printing paper, printing chemicals and accessories US\$350,000.

6. EQUIPMENT

This includes the cost of modern photo interpretation equipment, map making and copying of maps, surveying instruments and four Jeep type vehicles. This budget will also provide funds to purchase specialised equipment necessary to strengthen existing inventory/mapping facilities in member countries.

7. TRAINING

Seminars in host country and other SADCC countries		130,000
Short courses and observation visits overseas		150,000
In service training in SADCC countries		<u>180,000</u>
	US\$	460,000

SUB-PROJECT: FOREST INVENTORY UNIT
LOCATION: MALAWI
PRESENTED BY: SADCC FORESTRY SECTOR
DURATION: 4 YEARS
COST US \$1,062,700

1. OBJECTIVES OF THE SUB-PROJECT

- (a) To set up a Forest Inventory Unit within the Department of Forestry whose main responsibility will be to conduct comprehensive forest inventories in the Forest Estates of Malawi; both in plantations and indigenous woodlands.
- (b) Through the inventory work, to produce yield forecasts for each forest, indigenous or planted, which will facilitate the preparation of short term Working Plans and long-term Management Plans, both of which are indispensable in sound management of the forest resources.

2. GOALS OF THE SUB-PROJECT

To set up a Forest Inventory Unit with the Department of Forestry where comprehensive Working and Management Plans of the various forest resources will be produced and kept up-to-date.

3. SUB-PROJECT

To establish a Forest Inventory Unit within the Department of Forestry for the purpose of conducting inventories in the forest estates in Malawi. Work will commence in plantation forests and there after in indigenous forests. It is estimated that some 800 ha of plantations will be inventoried each year with yield forecasts being produced from the data so collected. Such forecasts will enable the preparation of both Working Plans and long term Management Plans, both of which are essential for the sound management of the resources.

4. BACKGROUND INFORMATION

The Department of Forestry manages a total area of 7,770 km² of woodland of which about 75,000 ha are planted to exotic softwood (mostly pines) and hardwood (mostly Eucalypts) species for the produ-

ction of timber, pulpwood, poles and fuelwood. Afforestation programmes are increasing in scale. However, due to the lack of staff and funds, up-to-date inventory information for most plantations is lacking and inventory information for indigenous forests is practically non-existent. The present specialist staff of one inventory officer is completely inadequate to conduct inventories necessary for the sound management of the entire forest estate.

5. SUCCESS SO FAR ACHIEVED

Inventories have been conducted in the Viphya Plantations. These, however, were conducted by overseas firms of consultants some time ago and now require to be up-dated. Further, small-scale inventories have been conducted at Zomba, Blantyre and Dedza. However, this latter exercise was conducted by staff normally employed on other duties.

6. EXECUTION AND SUPERVISION

This is part of the proposed Regional Forestry Inventory Project to be co-ordinated by the People's Republic of Mozambique. The forest inventory work and the construction of the offices and the staff housing will be under the supervision of the Malawi's Department of Forestry.

7. COST

The Sub-Project is estimated to cost US \$1,062,700; and the details are attached.

ATTACHMENT

MALAWI: FOREST INVENTORY UNIT

Details of Financial Expenditure (U.S. \$)

<u>Buildings</u>	
Staff Houses	\$ 427,000
Offices and Stores	\$ 63,000
Total	<u>\$ 490,000</u>
<u>Plant and Vehicles</u>	
4 x Long Wheel Base Landrover	\$ 47,600
6 x Motor Cycles	\$ 6,300
3 x Trailers	\$ 10,500
1 x 2 Berth Caravan	\$ 8,400
Total	<u>\$ 72,800</u>
<u>Other Equipment</u>	
3 x Programmable Calculator	\$ 4,200
10 x Desk Calculator	\$ 2,100
Mensuration Equipment	\$ 25,200
Total	<u>\$ 31,500</u>
<u>Personal Emoluments</u>	
Salaries and Wages	\$ 182,800
<u>Maintenance and Running Expenses</u>	
<u>of Plant and Vehicles</u>	\$ 108,500
<u>Contingencies (20%)</u>	<u>\$ 177,100</u>
Grand Total Cost (Approximately)	<u><u>\$ 1,062,700</u></u>

SUB-PROJECT : INVENTORY OF THE TEAK FORESTS.
LOCATION : ZAMBIA
PRESENTED BY : SADCC FORESTRY SECTOR
DURATION : 3 YEARS
TOTAL COST ESTIMATE : U.S. \$880,000

BACKGROUND

The Teak Forests of Southwestern Zambia, which extends into Zimbabwe, Angola, Botswana and Namibia, have been devastated in the recent past by over-exploitation and fire, and there are now grave doubts as to whether they can ever be restored to anything like their former magnificence and productivity. Harvesting and utilisation of Teak Forests Timbers, (Baikiaea plurijuga, Pterocarpus antunesii, Ricinodendron rautenii etc,) is continuing at a faster rate than their replacement. These forests still have considerable socio-economic importance. They are also of great interest to biologists of many disciplines and their conservation and planned utilisation is a matter of international concern. In order to effect sound management and conservation of these forests, their extent must be determined. The combination of low intensity forest inventory and forest experimental work for yield studies are proposed.

The Teak Forests are regarded as a good area to gain experience and expertise concerning methods which would later be applied to larger areas to a national forest inventory of Zambia for example.

Multiple state (stratified) sampling techniques to be employed. Stratification is to be made by remote sensing either from aerial photographs or from satellite imagery or from both.

OBJECTIVES

1. To undertake a low intensity inventory to up-date information on the distribution and stocking levels of the major species of the Teak Forests.
2. To set up permanent sample plots for successive measurements and yield studies.

COST

The Sub-Project is estimated to cost US\$880,000 as detailed below:-

(i)	PERSONNEL (SALARY + SUB.)	US\$200,000
(ii)	LOCAL TRAVEL	70,000
(iii)	CONTRACTUAL SERVICES (PLANE HIRE, PHOTO PROCESSING E.T.C.)	200,000
(iv)	SUPPLIES AND MATERIALS	70,000
(v)	EQUIPMENT AND VEHICLES	100,000
(vi)	TRAINING	90,000
(vii)	OPERATING COSTS	100,000
(viii)	CONTINGENCIES	50,000
	TOTAL	<hr/> 880,000 <hr/>

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<u>PROJECT</u>	SADCC REGIONAL TREE SEED CENTRE
<u>RESPONSIBLE COUNTRY</u>	A SADCC COUNTRY
<u>SADCC PROJECT NO.</u>	6.0.5.
<u>COST ESTIMATE, (MAIN PROJECT)</u>	US \$810,000
<u>SUBPROJECT (MOZAMBIQUE)</u>	449,000
TOTAL	US \$ <u>1,259,000</u>

1. OBJECTIVES

- 1.1 To identify problems in the gathering of information and the collecting and storing of seed for specific regions and suggest solutions.
- 1.2 To define the purpose and needs of a regional seed centre and define the roles thereof.
- 1.3 To define terms of reference and prepare a programme of work.

2.1 General or mid-term objectives

"To assist participating countries to secure their forest tree seed supplies by providing authenticated, certified collections of seed (or vegetative propagation material) for research and development purposes."

2.2 Specific objectives

The following specific objectives are defined:

- 2.2.1 Undertake and coordinate surveys to identify and register stands in the Region which represent useful sources of seed.
- 2.2.2. Develop and coordinate a system of certification of seed stands and seed as to their origin and genetic quality and maintain records accordingly.
- 2.2.3. Coordinate or otherwise assist with the testing of species and provenances.
- 2.2.4. Identify gaps in the array of species available for specific forestry purposes and assist with research to fill them.
- 2.2.5. Provide or assist in the provision of quarantine facilities.
- 2.2.6. Assist in the development of seed orchards of species of prime importance in participating countries.

3. PROGRAMME OF WORK

The items listed below are given in order of priority.

- 3.1 Undertake and coordinate surveys to identify and register stands and to coordinate a system of certification of seed stands.

Involves the following:-

- 3.1.1 Each participating country would be required to undertake to provide a list of seed sources (known pure stands, stands believed to be pure, stands of particular provenance, etc).
- 3.1.2 Appointment of a coordinator to identify species and provenances. Enlist the services of a competent eucalypt taxonomist from Australia.
- 3.1.3 Approach to be made to ACIAR to fund such a specialist.
- 3.1.4 Selected stands to be given priority by species and importance or provenances of those species within the Region.
- 3.2 Each country to assimilate information of species and provenance selection for future forestry programmes within the Region.
 - 3.2.1 Request an indication of present and future planned provenance trials in each country.
- 3.3 Start on the expansion of facilities for handling, processing, testing and storage of seed.
 - 3.3.1 RSC would require a two-year seed requirement forecast from each country to be able to plan the expansion of facilities.
 - 3.3.2 Initiate the operation of a seed bank and adequate storage and testing facilities.
 - 3.3.3 Start collecting seed for distribution as soon as possible.
- 3.4 Examine the possibility of the acquisition of seed for gene conservation stands and/or provenance trials from sources both within and outside the Region.
 - 3.4.1 Participants requested that attention be given to indigenous species within the region, e.g. African Acacias, and that seed collecting missions, both nationally and regionally, be undertaken.

- 3.4.2 RSC to pay particular attention to multipurpose species of particular importance to the region.
- 3.4.3 Questionnaire to be sent out to participating countries to assess the national needs, both in indigenous and exotic species, and to assess management requirements (i.e. fuelwood crops, and zone afforestation, control of soil erosion etc).
- 3.4.4 Initially the seed bank would attempt to collect a wide range of species and would gradually increase stocks of those species in greater demand within the region.
- 3.4.5 Assistance should be sought from ACIAR and CSIRO for the acquisition of gene lots of Eucalypts, Australian Acacias and other dry land forest species.
- 3.4.6 Where stocks of desired species and/or provenances are not available, consideration could be given to mounting seed collecting missions. CSIRO may be able to include such missions in their plan for the next two year's operation.
- 3.4.7 Encourage the exchange of information on performance species and provenances already established throughout the region.
- 3.5 Develop an efficient computerized documentation system.
 - 3.5.1 Need to acquire the CSIRO data based and seed documentation computer programme for modification and adaptation.
 - 3.5.2 Standardize the form of data collection.
 - 3.5.3 Individual countries would be responsible for providing data to be included in the data bank.
- 3.6 Recruitment of staff for RSC and the development of training courses to satisfy immediate needs.
 - 3.6.1 Guidance on staff requirements to be sought from CSIRO and/or other seed centres.
 - 3.6.2 Early establishment of training courses at RSC to train staff to run national seed centres on similar lines.
 - 3.6.3 May initially require some RSC and/or national seed centre staff to attend short training courses outside the country. Offer made by CSIRO to consider reserving places on their training courses for technicians from RSC staff.

- 3.6.4 Exchange of staff between RSC and national seed centres and between participating countries.
- 3.7 RSC to initiate and coordinate a programme of species and provenance testing within participating countries.
 - 3.7.1 Must be done on a regional scale to spread the load.
 - 3.7.2 Early assistance in the development of seed production stands of newer species (species not contained in the national improvement programmes).
- 3.8 Assist participants in their compliance with phytosanitary requirements in respect to import or export of seed.

4. COST

The cost of the project is estimated to be U.S. \$810,000

SUMMARY AND CONCLUSIONS

1. The problems of seed collection, storing and handling within the region have been identified.
2. The proposal for the Regional Seed Centre has been accepted in principle by participating countries.
3. Zimbabwe is the most suitable location in terms of existing facilities, infrastructure and expertise.
4. The Regional Seed Centre will be unable to function without the collaboration, at all levels, of all the participating countries.
5. The long term objectives of providing authenticated, certified seed are defined as are the immediate objectives.
6. Items and activities requiring immediate action have been formulated, although finer details of some operations still need to be decided.
7. The cost of the project is estimated to be U.S. \$810,000.

MAIN PROJECT
FINANCIAL SUMMARY (U.S. DOLLAR)

EXPENDITURE ITEM	1985/86	1986/87	1987/88	TOTALS
(02) Buildings	100,000	140,000	50,000	290,000
(03) Equipment	151,000	40,000	-	196,000
(04) Plant and Vehicle	11,400	20,000	-	33,000
(05) Running Expenses	37,000	27,000	44,000	88,000
(06) Personal Emoluments	40,000	10,000	10,000	150,000
(07) Special Expenditure	10,000	10,000	40,000	90,000
TOTALS	449,400	387,000	195,000	810,000

3. NOTES ON FINANCIAL SUMMARY

(02) Buildings - K250,000

- Buildings will include a well-insulated coldroom, and adjoining seed receiving room and a laboratory.
- Three dwelling houses would be necessary for the senior staff of the Centre and six junior staff quarters for laboratory assistants and seed collectors.

(03) Equipment - K210,000 (U.S. \$196,000)

- Air compressor and blower
- Thermohydrographs
- Maximum and minimum thermometers
- 3 x microscopes (dissecting and light)
- Germination tank
- X-Ray facility
- Mist propagation unit
- Glassware
- Filing Cabinets

- Typewriters
 - Seed containers, calico cloth, envelopes, etc.
 - Tree bicycles
 - Seed cleaners and gravimetric facilities, etc.
- (04) Plant and Vehicles - K42,000 (U.S.\$38,000)
- 2 x pick-up for local seed collection expeditions.
 - 2 x motor-cycles for general local running.
- (05) Running Expenses - K90,000 (U.S.\$86,000)
- Fuel and maintenance of vehicles and laboratory equipment plus night allowances for staff.
- (06) Personal Emoluments - K150,000
- 3 x Senior staff at local salary.
 - 10 x Seed collectors, seed store attendants and laboratory technicians.
- (07) Special Expenditure - K90,000
- External travel
 - Conferences and seminars
 - Short courses for staff
 - Printing and publishing
 - Dispatch of seed and correspondence.

PROJECT SADCC REGIONAL TREE SEED CENTRE

SUB-PROJECT TITLE : STRENGTHENING THE EXISTING
FOREST TREE SEED CENTRE AT
MARRACUENE, NEAR MAPUTO,
MOZAMBIQUE.

SADCC PROJECT NO. : NEW PROJECT PROPOSAL

DURATION : 3 YEARS

TOTAL ESTIMATED COST : U.S. \$449,000

OBJECTIVES

The Project aims at strengthening the existing seed centre facilities of the Forest Department of Mozambique through the following actions:-

1. The purchase of equipment necessary for the collection, processing, storage, testing and distribution of seed for research and reforestation projects.
2. The development of suitable techniques and methods involved in the use of the above mentioned equipment and the training of local staff.
3. The establishment and assessment of selected species and provenance trials suitable for the nation's fuelwood and industrial reforestation programmes.
4. The establishment of seed orchard and seed collection stands to ensure the self-reliance of Mozambique in its reforestation plans.

BACKGROUND INFORMATION

Regular and adequate supplies of seeds of high quality and proven provenances are an important aspect of any large scale reforestation scheme. Some SADCC countries, notably Zimbabwe and Malawi are now self-sufficient and also export large quantities of surplus production. Others such as Mozambique still depend on overseas commercial sources which are often unreliable and expensive.

It is accepted that no single country will be able to produce the different varieties of seed necessary for the wide range of climates and soil found in SADCC countries. Also there are high risks involved in relying on external sources for future supplies and the world-wide trend,

supported by FAO and International Organisations has been to encourage individual countries to establish their own seed centres.

Mozambique has embarked on large scale reforestation schemes which will involve the need for increasing quantities of seed annually. Because of its critical foreign exchange situation and the need to lift productivity through improved seed quality, the Government of Mozambique, with the full support of the Forestry Sub-Committee for SADCC countries is seeking support in its efforts to strengthen its seed centre activities and facilities along the lines already achieved by many of the developing countries of Africa as a whole and SADCC countries in particular. Through this project, Mozambique hopes to be able to draw on the experience and expertise of Zimbabwe, Malawi and Zambia as well as the assistance offered through world-wide international agencies such as the Commonwealth Forestry Institute at Oxford and the DANIDA Seed Centre in Denmark.

SUMMARY OF COSTS (U.S. \$)

ITEM	1985	1986	1987	TOTAL
1. Personnel	45,000	45,000	45,000	135,000
2. Buildings	50,000	150,000	30,000	320,000
3. Supplies	6,000	6,000	4,000	16,000
4. Vehicles	26,000	-	-	26,000
5. Operating Expenses	10,000	10,000	10,000	30,000
6. Training and Study Tours	4,000	6,000	2,000	12,000
TOTAL	141,000	217,000	91,000	449,000

NOTES ON SUMMARY OF COSTS

1. Personnel
 - 1 Geneticist/Tree Breeder 36,000
 - 11 Secretary (Bilingual) 9,000
2. Buildings
 - for Cold Room
 - two houses for Senior Staff
 - four houses for Junior Staff

3. Supplies

- Office Supplies, Laboratory Supplies, Seed Imports.

4. Vehicles

- 1 x Long Wheel base Jeep for Seed Collection
- 1 x Short Wheel base Jeep for Geneticist
- 3 x Motor Cycles for Seed Collecting Team

5. Operating Expenses

- Gasoline, car maintenance, telephone, telex, stamps, lubrication, etc.

6. Training and Study Tours

In-service training, short attachments at Regional Seed Centre and attendance at Seminars and Conferences overseas.

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SADCC REGIONAL EXPERIMENTS ON DRY ZONE FUELWOOD TREE
SPECIES

PROJECT TITLE : DRY ZONE AND HIGH ALTITUDE
FUELWOOD TRIALS

RESPONSIBLE COUNTRY : MALAWI, THROUGH THE
DEPARTMENT OF FORESTRY IN
THE MINISTRY OF FORESTRY
AND NATURAL RESOURCES

SADCC PROJECT NO. : 6.0.6

RELATED PROJECTS : WOOD ENERGY PROJECT; RURAL
FUELWOOD AND POLES RESEARCH
PROJECT; AGROFORESTRY RESEARCH
PROJECT.

DURATION OF THE PROJECT : 5 YEARS

TOTAL ESTIMATED COST : US \$381,540

1. OBJECTIVES OF THE PROJECT

1. to identify tree species and provenances suitable for growing in the dry silvicultural zones of member states.
2. to assist in the establishment of woodlots and agroforestry plots on smallholder lands, and of large scale fuelwood plantations.

2. GOALS OF THE PROJECT

To develop suitable silvicultural and forest management techniques for the rapidly extending dry silvicultural zones in the Region and in high altitude areas such as Lesotho; to identify suitable trees for the provision of fuelwood and poles either in a woodlot or agroforestry project; to intensify cooperation among the member states in forest research projects so as to ensure wide applicability of research results and the sharing of valuable data and experiences.

3. PROJECT TARGET

It is planned to establish comprehensive species and provenance trials in the dry silvicultural zones and in high altitude areas as necessary in the member states to identify the most suitable ones for large scale afforestation in the dry zones of the Region. The test materials will include drought and frost resistant tree species which could be of use as fodder or as green manure in an agroforestry farming system so as to help in improving soil

fertility and minimizing soil erosion by providing protective ground cover. Information on such trees is currently sparse in many countries and is almost non-available for the Region as a whole for the dry silvicultural zones: largely because forestry research has been concentrated in areas of industrial afforestation projects, and there has been no interchange of information.

The dry silvicultural zones in most countries are also important farming areas where wood is in short supply due to extensive tree felling for agricultural expansion and the provision of fuelwood and poles. The residual indigenous wood resources have slow growth rates, approximated at less than 2M³/ha mean annual increment on the average, and are, therefore, inadequate to satisfy the overall demand for wood and tree produce. A possible solution to the increasing wood shortage would be to establish locally plantations of the best adapted and most productive tree species for fuelwood and poles and, equally important, to help retard devastation of the indigenous woodlands on fragile areas and hillslopes which is currently taking place at a fast rate.

Research into suitable tree species for these purposes in the dry silvicultural zones is a relatively new development in many member states. Such research is urgent, indeed, if a sustained supply of poles, fuelwood, fruit, shade, manure etc, is to be assured and the degradation of the environment due to the rapidly disappearing indigenous trees is to be averted. This project, therefore, intends to provide specific information to be applied to solve both National and Regional dry zone afforestation problems. Malawi is proposed as a coordinator of the project as it has some experience with this type of research work from the IDRC-funded "Rural Fuelwood and Poles Research Project" for the dry zones of Malawi. It also has a project, funded by IFS, to study the propagation of eucalypts for the dry zone of Malawi.

4. JUSTIFICATIONS OF THE PROJECT

Some countries within the SADC Region wish to acquire funds to enable them establish tree plantations for various uses. However, with the lack of appropriate silvicultural techniques and expertise, several of such projects have not been successful. Donor agencies have as a result withdrawn or refused to support the projects.

In countries like Malawi and Zimbabwe, some techniques of tree growing have been identified, and financial assistance from the World Bank and IDRC for example has been obtained. This means that the required silvicultural information is available but has not been documented or brought to the attention of other member states.

As fuelwood is the major source of energy in urban and rural areas, the indigenous forests are rapidly dwindling. Their replacement by fast growing exotics is slow, and in many cases there has been a limited number of such species tested. There is therefore need to test new species both indigenous and exotic and draw up appropriate silvics primarily for fuelwood production.

5. SUCCESS SO FAR ACHIEVED

Not much is known about the research trials established in the dry zones of the SADCC member states. In Malawi, however, some 400 ha of trials were established throughout the country with financial assistance from the International Development Research Centre (IDRC) of Canada. These trials, which now range from 3 to 5 years, have identified some trees for the dry zones suitable for use as fuelwood, poles, live-hedge, fodder and shade. Examples are Eucalyptus camaldulensis and E. tereticornis for poles, Leucaena leucocephala for fodder and green manure, Neem for shade and Prosopis juliflora for soil enrichment and live fencing. It is hoped that these and other results from other countries would provide some useful background information and a springboard for the proposed project, as seeds of certain trees can be supplied from these trials.

6. EXECUTION AND CO-ORDINATION OF THE PROJECT

Each member state will send to the co-ordinator a list of species which are locally recognised as successful within their countries for fuelwood and pole production, shade and fodder. From these, a list of 20 species will be prepared and used for trials. The co-ordinator will arrange for the purchase and distribution of the seed.

Each state will locate trial sites and be responsible for establishment, maintenance and assessment of their own trials and all assessment results will be passed to the co-ordinator. Comprehensive reports on establishment and tending will also be sent to the co-ordinator.

A standard randomised block design will be used as follows:

espacement	2.5m x 2.5m
plot size	7 x 7 trees
replications	5
area	3.06 ha

Assessments will be done at ages 1, 2 and 4 years after the last one, the co-ordinator will visit all sites before final analysis and reporting.

COSTS U.S. \$

Site identification (local travel	18,000
Seed cost + distribution	2,000
Nursery costs	26,500
Site preparation, planting + tending	43,300
Fertilizers + pesticides	4,500
Fire protection	42,000
Fencing (13 sites)	97,500
Assessment and preliminary data processing	47,250
Co-ordinator - travel + subsistence	14,400
- salary	17,500
- computer, stationery, secretarial, printing	5,000
Contingencies	63,590
Total estimated cost	<u>381,540</u>

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<u>PROJECT</u>	FORESTRY TECHNICAL CONSULTATION PROJECT
<u>LOCATION</u>	ALL SADCC MEMBER STATES (MALAWI -CO-ORDINATOR)
<u>SADCC PROJECT NO.</u>	6.4.11.
<u>PRESENTED BY</u>	SADCC FORESTRY SECTOR
<u>DURATION</u>	5 YEARS 1985/86 TO 1990/91
<u>TOTAL ESTIMATED COST</u>	U.S. \$867,576

1. OBJECTIVES OF THE PROJECT

To advance knowledge through exchange of personnel, technical information and skills by frequent inter-member country visits, Regional workshops and seminars, and to update the forestry sector report

2. PROJECT TARGET

Three Study Tours, two on obtaining local knowledge on various forestry activities in member countries, and the third for up-dating the SADCC Forestry Sector Report. Three Seminars /Workshops will be mounted for an exchange of forestry technical knowledge and information. Experts on technical assistance will be recruited for a period of 24 man months while 10 consultancies will be requested for specific subject areas.

3. BACKGROUND INFORMATION

In December 1983, the SADCC Forestry Sector Technical Sub-Committee organised and held a meeting in Blantyre, Malawi to adopt the SADCC Forestry Sector Report prepared by the coordinating member state, Malawi. At this meeting areas of cooperation and Project identifications were made, one of which project was this particular one. The minutes of this meeting were adopted at the Lusaka Council of Ministers meeting in February, 1984.

4. JUSTIFICATION FOR THE PROJECT

SADCC member countries are among many of the developing countries throughout the world which lack technical knowledge and skills, as well as where difficulties of exchange of personnel and information were experienced. Opportunities for higher learning are limited. Thus there is need for invest in these areas to offer chances for progress and development particularly so in the Forestry Sector of the SADCC countries.

(a) Study Tours

The level of development of different aspects of forestry in the Region varies from country to country. The formation of SADCC has offered an ample opportunity for inter-state visits by officers of member states to learn at first hand what takes in one's own country. So far there have been few contacts and few visits in the form of study tours. The situation must improve.

(b) Forestry Sector Report

The basis for co-operation in the Forestry Sector area is an assessment of the forest resource. A preliminary report was produced when an opportunity was given to Malawi officers to visit member countries on a fact finding mission. Since rapid development is taking place in these countries, there is need to re-assess and up-date the report so as to aid planning which should be consistent with requests for financial aid and investments.

(c) Technical Assistance

In view of manpower constraints in some of the major forestry sector fields, SADCC countries require external assistance in terms of personnel for long or short periods until such time that local trained staff are available. In a number of cases this is really a problem of development. It is envisaged that technical assistance will be required for sometime in the SADCC Region. Hence this request.

(d) Seminars and Workshops

Very few Seminars and Workshops have been held so far between member states. Seminars and Workshops are main forums for exchange of knowledge on particular problematic subjects. It is designed that a number of these should be held in the SADCC region so as to give SADCC officers an opportunity to meet, discuss and offer development ideas on a number of forest sector subjects.

(e) Consultancies

In the meantime, SADCC countries depend so much on external consultants on specialist forestry subject areas. This is so because local specialists on most subject areas do not exist. It is a substantial drain and a burden on financial resources for these countries.

Anyhow in view of non-availability of local consultants, it is essential that external consultants should be requested. Exchange of SADCC personnel, if available would most certainly be cheaper than those coming from outside.

5. SUCCESS SO FAR ACHIEVED

This is a new Project. A fact finding mission consisting of two Malawi Officers visited all SADCC member states to assess the forest resources in these countries. A report was produced and accepted with amendments at the Blantyre, Malawi meeting in December, 1983. The minutes of that meeting were adopted at the Lusaka, Zambia, Council of Ministers meeting in February, 1984. Some few contacts

on a bilateral basis have been made between some of the members. The same applies to technical assistance and consultancies.

6. EXECUTION AND SUPERVISION

Malawi, as forestry sector coordinating member state, will ensure that successful implementation of the project is made. Other SADC member states will in the course of the project implementation assist wherever possible in hosting, organising, administering, and participating in seminars/workshops, consultancies, technical assistance, etc.

7. FINANCIAL SUMMARY (YEAR 1985/86 - 1990/91)

(U.S. \$)

Study Tours	=	228,000
Up-dating Forestry Report	=	28,000
Technical Assistance	=	200,000
Seminars/Workshops	=	100,980
Consultancies	=	166,000
Contingencies 20%	=	144,596
Grand Total		<u>867,576</u>

8. EXPENDITURE DETAILS

(a) Study Tours

4 x Study Tours to be made within a period of five years made up of 10 officers one from each country plus a coordinator/rapporteur for a period of 3 weeks per tour, a total of 12 weeks at an estimated cost of US \$200/officer per day for 84 days plus cost of flight.

(US \$168,000)

(US \$ 60,000)

(US \$228,000)

(b) Forestry Sector Report

1 x Study Tour to up-date the Forestry Sector Report on the state of the Forest Resources in each member state.

a team of 2 x officers for 40 days at an estimated US \$200/day per officer (US \$16,000)

plus flight expenses (US \$12,000)

(US \$28,000)

(c)	<u>Technical Assistance</u>	
	Technical Assistance in various specialist forestry fields for a maximum period of 24 man months.	
		(US \$200,000)
(d)	<u>Seminars and Workshops</u>	
	To mount an estimated number of 3 x Seminars/Workshops on various forestry problems for a total period of 18 x days (six days per Seminar/Workshop), 18 x officers per seminar at an estimated cost of US \$200/officer/day	(US \$64,800)
	flight expenses (\$300 return ca)	(US \$27,000)
	workshop admin.	(US \$ 9,180)
		<u>(US \$100,980)</u>
(e)	<u>Consultancies</u>	
	Short-term (2-3 weeks) consultancies on identified forest sector subject areas requiring consultancy from time to time within the five-year period for an estimated number of 10, at an estimated cost US \$700/day including subsistence for a maximum number of 180 days	= (US \$126,000)
	plus flight expenses local travel	= (US \$ 40,000)
		<u>(US \$166,000)</u>
(f)	<u>Contingencies</u>	= (US \$144,596)
	GRAND TOTAL	= <u>(US \$867,576)</u>

Project Title: Forest Industries Training
Centre for SADCC Countries

Project No. 6.0.8

This project has already an offer for funding from the Italian Government through FAO. The FAO/Italy mission has already submitted its report to SADCC. The following is an extract of the project from the FAO Missions report number FO/GCP/RAF/199/ITA of March 1984.

B. Objectives of the Project

The long-term objective of the Project is to contribute to the economic and social development of SADCC countries through the improvement of the productivity and quality of production of their forest industries.

The immediate objectives include:

- The establishment of a Forest Industries Training Centre for SADCC countries, (to be) located in Zimbabwe, consisting of production plants, workshops, lecture rooms, dormitories and social facilities;
- Training technicians and trainers of skilled workers for primary mechanical forest industries.

C. Main Outputs of the Project

The project will establish a fully operational Forest Industries Training Centre with the following facilities: buildings and machines for the main types of primary industrial wood processing and for workshops; classrooms and laboratories; office building; dormitories, dining hall and other social buildings.

The Centre will have an annual output of 100 trainers of skilled workers and 10 technicians in the following fields:

Sawdoctoring
Sawmilling
Sawmill maintenance
Timber grading, drying and preservation
Plywood, blockboard and veneer production
Reconstituted wood panel production
Maintenance in wood-based panel mills

Training of trainers will last one year and of technicians two years. The annual intake of students will be about 16 percent higher than the planned output of graduates to allow for failures, unexpected withdrawals, etc. The total capacity of the Centre will thus be 140 students.

In addition to the regular, long-term training courses for resident students mentioned above, there will be short-term courses for technical and managerial staff devoted to specific subjects considered of importance by governments and industry.

D. Location and Organization

The Project will be located close to Mutare in an area bordering with the Zimbabwe Forestry College or with the Mutare Technical College. The final decision on the exact location will be taken after a detailed examination of the two alternatives. The Centre will function within the organizational structure of the Government of Zimbabwe through its Forestry Commission of the Ministry of Manpower Development. The final decision in this respect will be taken by the Government of Zimbabwe.

The international team of the project will consist of the Project Manager who will also perform the function of the principal of the Centre and three experts (teachers) supported by visiting lecturers, consultants and administrative staff. The local staff will consist basically of counterparts to the international staff, instructors, various administrative supporting personnel and skilled and unskilled workers need for the operation of the Centre.

The Project Manager, in cooperation with the host country and the SADCC Secretariat, will maintain liaison with appropriate institutions in participating countries to carry out the project activities.

Participating governments will nominate liaison officers who will be responsible for the implementation of project activities related to their countries.

FAO, in consultation with the Government of Italy and SADCC, will establish an Advisory Board which will periodically examine and provide advice on the professional aspects of the project activities.

Project Budget covering Donor Contribution (US \$)*

Code	Object of Expenditure	m/m	Year 1 m/m	Year 2 m/m	Year 3 m/m	Year 4 m/m	Year 5 m/m	Year 6 m/m	Total
10 Personnel									
	Project Manager	12	85 200	85 200	85 200	85 200	85 200	85 200	511 20
	Sawmilling Expert	-	-	-	3 18 000	12 72 000	12 72 000	12 72 000	39 234 00
	Sawdoctoring Expert	-	-	-	3 18 000	12 72 000	12 72 000	12 72 000	39 234 00
	Panel Expert	-	-	-	3 10 000	12 72 000	12 72 000	12 72 000	39 234 00
	Administrative Officer	12	53 400	53 400	53 400	3 13 350	-	-	39 173 55
	Senior Secretary	12	9 500	9 500	9 500	12 9 500	12 9 500	12 9 500	72 57 00
	Visiting Lectures	-	-	-	-	5 48 000	5 48 000	5 48 000	15 144 00
	Consultants	4	32 000	120 000	120 000	3 30 000	3 30 000	3 30 000	37 362 00
	Sub-total		180 100	268 100	322 100	447 050	448 700	448 700	484 2 114 00
	20 Official duty travel		12 000	16 000	16 000	8 000	8 000	10 000	70 00
	30 Contractual services		654 000	1 700 000	706 000	40 000	40 000	40 000	3 180 00
	40 General operating expenses		10 000	10 000	20 000	40 000	40 000	40 000	160 00
	50 Supplies and materials		2 000	8 000	10 000	70 000	70 000	70 000	230 00
	60 Equipment		-	500 000	2 915 000	-	-	-	3 415 00
	80 Training (internal/external)		-	50 000	305 000	846 000	846 000	826 000	2 873 00
	90 Project servicing cost		111 553	331 773	558 233	188 636	188 851	186 511	1 565 55
	Total		969 653	2 843 873	4 852 333	1 639 686	1 641 551	1 621 211	13 608 30

*The level of the budget has been determined based on the dollar value as at 28th February 1984.

N.B The budget for the first year of the project can be considered final. The budget for the subsequent years constitutes the best estimate at this time and therefore should be considered as provisional. The final budget for each subsequent year will be determined in the September of the preceding year based on the progress of work and, if necessary, adjustment of costs due to inflation.

Forest Industries Training Centre (FITC)
for SADCC Countries GCP/RAF (ITA)

Appendix II

Project Budget Covering Host Country Contribution

(ZRD)

	m/m	Year 1	m/m	Year 2	m/m	Year 3	m/m	Year 4	m/m	Year 5	m/m	Year 5	m/m	Total
1. PERSONNEL														
Counterpart staff (5)	-	-	12	16 000	17	23 000	60	80 000	60	80 000	60	80 000	209	279 000
Secretary (1)	-	-	12	9 500	12	9 500	12	9 500	12	9 500	12	9 500	60	47 500
Typist (3)	-	-	12	9 000	24	18 000	36	27 000	36	270 000	36	27 000	144	108 000
Clerks (3)	-	-	12	9 000	24	18 000	36	27 000	36	27 000	36	27 000	144	108 000
Drivers (4)	12	3 600	24	7 200	48	14 400	48	14 400	48	14 400	48	14 400	228	68 400
Automechanics (1)	-	-	12	4 000	12	4 000	12	4 000	12	4 000	12	4 000	60	20 000
Guards and others (8)	-	-	-	-	48	12 000	96	24 000	96	24 000	96	24 000	336	84 000
Mechanics and others (4)	-	-	-	-	48	16 000	48	16 000	48	16 000	48	16 000	192	64 000
Machine operators (5)	-	-	-	-	24	7 000	60	17 500	60	17 500	60	17 500	204	59 500
Sub-total	12	3 600	84	54 700	257	121 900	408	219 400	408	219 400	408	219 400	1577	838 400
=====														
2. TRAVEL AND DSA	-	-	-	5 000	-	5 000	-	5 000	-	5 000	-	5 000	-	25 000
3. CONTRACTUAL SERVICES	-	-	-	-	-	-	-	50 000	-	50 000	-	50 000	-	150 000
4. TIMBER SUPPLY	-	-	-	-	-	-	-	10 000	-	10 000	-	10 000	-	30 000
5. LAND	240	000	-	-	-	-	-	-	-	-	-	-	-	240 000
Total	243	600	84	59 700	257	126 900	408	284 400	408	284 400	408	284 400	1577	1 283 400
=====														

Total Estimated Production of Wood Production in
Some S.A.D.C.C. Member States (1981)

Type of Forest Product	Angola	Malawi	Mozambique	Tanzania	Zambia	Zimbabwe
Fuelwood (m ³)		7,340,000*	13,800,000	32,456,000	3,430,000	5,490,000*
Charcoal (tonnes)		25,000	78,900	288,380	307,000	1,178
Poles (industrial)(m ³)	155,227	1,260,000***	6,000	-	37,000	11,177
Sawlogs (m ³)(r)	72,400	102,900	190,941	451,000		
Lumber (m ³)		41,118	51,400	200,000	35,280	200,026
Railway Sleepers (m ³)		-	13,800	-		20,179
Panel Products (m ³)		10,000	3,424	450	3,487	14,503
Wood Pulp (tonnes)	5,500	-	-	-	-	26,894
Paper (tonnes)	-	-	3,000	-	-	61,961
Mining Timber (tonnes)	-	-	-	-	-	2,477
Matches (million)	-	10,750	-	-	-	8,171

* Solid

*** For all purposes: domestic, industrial and
institutional uses