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Review of Telecommunication Programmes

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REVIEW OF TELECOMMUNICATION PROGRAMMES

1. INTRODUCTION

SATCC has adopted the following general guidelines to promote and substantially improve the telecommunications in the region to the benefit of joint economic development:

- restoration and improvements of basic telecommunication services between the countries and areas experiencing low grade of services;
- complementing the improvement of transport services with proper telecommunication services;
- establishment of efficient communications between the landlocked countries and the ports of the region;
- introduction in a large scale of the International Subscriber Dialling in the region and with the majority of the overseas countries;
- reinforcement of self reliance in respect of the regional traffic by the completing of the terrestrial microwave link network and with improvement of the interconnectivity of the Satellite earth stations whenever possible;
- provision of transit facilities within the region so that calls within the area need not to be routed via distant transit centres;
- improvement of the reliability and grade of services to acceptable international level on all traffic relations;
- minimisation of investment through efficient use of shared facilities by joint planning and by removal of obstacles like unduly transit charges.

The policy is mainly implemented through governments and national administrations by:

- acquiring investments under the best financial and technical conditions, an up-to-date integrated PANAFTEL network comprising terrestrial microwave links, satellite earth stations and international switching centres in the SADCC countries

- having a regional tariff structure based on actual costs in the SADCC countries along with coherent and compatible operational structures (including joint planning of provision for maintenance services), and thus ensuring a viable and cost-effective operation of the telecommunications services in the region.

- strengthening the SADCC telecommunications organisations through training programmes to enable them to be self-sufficient in the various telecommunication sectors on planning, operations and maintenance and be able to undertake tasks involved in the development of intra-SADCC telecommunications.

2. OPERATIONAL CO-ORDINATION

Due to very nature of world wide telecommunications extensive international co-operation is a necessity for the efficient operation of the regional network.

The main items for co-ordination are as follows:

- co-ordination and exchange of plans and studies;
- exchange of statistics and data on existing plant and facilities;
- exchange of traffic forecasts;
- maintenance, alternative routing and restoration;
- radio frequency co-ordination; and
- regional training facilities

Implementation of operational co-ordination is being undertaken under the auspices of SATA (Southern Africa Telecommunications Administrations) annual conferences.

Practical arrangements include bilateral contacts, working groups, seminars and studies.

Fundamental to the successful operation of the network is the preparation of optimum routing and switching plans for the SADCC countries; these are being prepared and will soon be implemented.

As part of the routing plan, Project 5.0.4, Implementation Study for Regional Earth Stations Connectivity Project has been completed and project elements needing financing have been identified for implementation.

2.1 Operations and Maintenance

With huge investments being made to place telecommunications at the service of general progress in development, it is necessary that maximum benefit must be derived both in the form of revenue and indirectly by services rendered to other sectors.

Usually in the region so far maintenance functions are often neglected for the sake of new installations. This results in the rate of faults being too high with users being deprived of service for hours, days or even weeks. The revenue lost far exceeds the cost of suitable maintenance. Repeated unavailability ruins the image and users feel compelled to set up parallel, private radio networks to meet their needs.

The first priority is to satisfy existing customers by investing in suitable operation and maintenance of existing equipment. Growth in services should have a parallel growth in maintenance capability. One classical approach is to establish maintenance contracts with the companies providing the equipment but the cost of such contracts is usually very high, they tend to become self-perpetrating and there is little transfer of knowledge and competence to the national staff.

2.2 The SATCC has the following targets in its programme for the next few years:

- Support the UNDP/ITU Maintenance Project in the drawing up in every SADCC country the National Plans for the Improvement of Maintenance. Zambia, Malawi, Swaziland and Mozambique have had their plans completed. Zimbabwe, Botswana, Lesotho, Angola and Tanzania are yet to develop the plan.

- Study and adoption of objectives for Service quality/availability measured by a few simple parameters; and hence the need for intercountry standardisation,(ref. Project 5.0.7, Model Study on Maintenance Procedures and Schedules for Terrestrial Microwave radio systems);

- Introduction in every country of plans and procedures for maintenance giving priority to :

  (i) The international network;
  (ii) the national network; and hence the need for inter-country standardisation

- Introduction of national and regional repair centers to service the regional network.

3. TRAINING

Training still remains one of the basic needs of the region for a correct operation and maintenance of telecommunications facilities. Training facilities for basic and medium levels have been established in all countries in the region to provide courses in various disciplines (see Table 1). However, Project 5.1.6, Expansion of Telecommunication Training Centre, Angola has been included in the programme to re-establish the facilities in Angola.

TABLE 1

Personnel Level Training available in SADCC Countries

LEVEL	STATUS	REMARKS	NUMBER OF COUNTRIES GIVING TRAINING
1	Professional	High level	-
2	Sub-professional highly skilled	High medium level	3
3	Skilled	Medium level	8
4	Semi-skilled	Basic level	8
5	Unskilled	-	all

Within the concept of integrated training and co-operation, telecommunications administrations with specialised or advanced facilities accept students from other countries in the region.

Malawi Posts and Telecommunications Training Centre, with funding from the EEC, is providing training facilities for medium/advanced level courses to Botswana, Lesotho and Swaziland.

Large sums of money are being spent by many Administrations in the region for modern telecommunications equipment and systems. To ensure their effective use, increasing numbers of personnel will need to be thoroughly trained at all levels.

To accurately plan and implement the training foreseen, a survey of telecommunication training needs and requirements is being undertaken covering the next 5-10 years.

The data which will be made available will indicate the number of training tasks ahead and the unsatisfied need for training positions in various categories of the national organizations.

In the meantime interim training courses are in the current SATCC programme as per the following, Table 2.

TABLE 2

COURSE	LEVEL OF TRAINING	COUNTRY ATTENDANCE	ATTENDEES/FELLOW-SHIPS	DONOR
Telecommunications Network Planning	1,2	-	-	SWEDEN
Satellite Technology	2,3	8	16	CANADA
Digital Network Planning	1,2	9	17	ITALY
Local Network (External Plant) Planning	2,3	8	36	ITALY

The main training targets for the SATCC for the next 5-10 years include:

- Training needs survey covering the SADCC countries is to be undertaken as soon as possible.

- Each country develop its training facilities and provide courses catering for at least its basic training requirements (Level 4);

- Training centres should also provide medium level courses (Level 3 and part of Level 2). Where annual requirements for medium level training are limited and uneconomical to provide, administrations concerned should send their trainees to multinational centres offering this type of training;

- High level training courses (part of Level 2 and Level 1) should be developed for the majority of identified requirements;

- Other special training courses such as maritime communications etc. should be developed as required;

- Training courses should not be limited to technical staff should involve non-technical staff and provide courses in such areas as finance, management, personnel; and

- Instructor posts should as far as possible be localised. It may also be useful to examine the possibility of exchanging instructors in furtherance of technical co-operation in the region.

4. INVESTMENT PROJECTS

Development of regional telecommunications facilities are an important element of the SADCC strategy for economic independence and diversion of traffic from South Africa and also reduction on dependence on South Africa's transit facilities.

Telecommunications has achieved considerable progress in the past years, especially for projects in the SATCC programme which fall mainly in the following categories:

- regional (PANAFTEL) microwave radio relay systems;
- Satellite earth stations;
- international telephone switching centres and telex exchanges.

4.1 PANAFTEL Microwave Link

A terrestrial microwave link now exists linking Botswana, Zambia, Zimbabwe, Malawi and Tanzania as part of the PANAFTEL network and connectivity the SADCC countries with the East African countries. Lesotho and Swaziland are transiting into the region via South Africa.

A substantial improvement in telephone traffic flow now exists among the SADCC countries connected to the PANAFTEL network.

During the period after 1991, implementation of the following microwave links:

- Project 5.5.3. National Telecomms Development Project with connections to Neighbouring countries, Mozambique;

- Project 5.1.1(T-PT-4), Rehabilitation of Troposcatter Link Malange-Saurimo-Luena-Zambia; and

- Project 5.8.4, Microwave Link Zambezi-Luena, Zambia

Will drastically improve the telecommunications services to the SADCC ports and other destinations in Mozambique and Angola.

4.2 Satellite Earth Stations

Each SADCC country has an earth station; Angola, Zambia and Malawi each have two stations.
The satellite earth station programme will extend up to 1991. the earth station in Tanzania, Project 5.7.3, is expected to be commissioned by end 1991.

Further earth stations are planned for Zimbabwe, Project 5.9.8, and Zambia, Project 5.8.3 which will give expansion, diversity and transit facilities to be SADCC countries through Zambia and to a certain extent through Zimbabwe.

In order to achieve improved interconnectivity among the different types of stations Project 5.0.4, Implementation Study for Regional Earth Station Connectivity Project, has been included in the SATCC programme in order to harmonise the shared use of the existing stations by the introduction of new developments and technologies in satellite communications.

The study is now ready and it is proposed to hold a seminar during the course of this involving co-operating partners and Administrations in the SADCC countries to identify sources of finance for project implementation.

4.3 International Telephone Switching Centres and Telex Exchanges

International Switching centres or facilities are available in the SADCC countries.

New digital centres with ISD facilities are now operating in Botswana, Lesotho, Malawi, Zambia and Zimbabwe. By end 1990 new digital centres will be implemented in Mozambique, Angola and Tanzania.

The provision of these facilities will give ISD service at least between the cities in the SADCC countries by end 1991 and much later for the rest of the region and national networks.

A study will be undertaken with the aim to co-ordinate the implementation of ISD requirements and remove the obstacles.

Transiting through South Africa will be eliminated completely replaced by transiting through Zambia, Zimbabwe and to a certain extent through Mozambique.

5. DEVELOPMENT OF THE NATIONAL TELEPHONE SUBSCRIBER BASE

In order to realise the maximum benefit from the large resources invested in the PANAFTEL network, it is necessary to further develop the national trunk network by establishing spar routes connecting to the PANAFTEL trunk routes and establishing local telecommunications services. In urban areas, it will be necessary to extend the local network, to provide services to all potential users not only in the government and business sectors but also in the private sector for cultural and social purposes.

In this regard the SATCC will progressively include in its programme projects for the rehabilitation and expansion of the local telephone exchanges and networks in the SADCC countries. Considering that more than 75% of the SADCC infra-regional traffic terminates or originates in the capital cities, it is important to give priority to the rehabilitation and extension of the local exchanges network in these centres (Luanda, Dar es Salaam, Maputo etc).

6. RURAL TELECOMMUNICATIONS

In most SADCC countries telecommunications facilities are concentrated in the metropolitan areas to the neglect of rural areas. Although broadcasting has an important role in the dissemination of information, it does not allow for feedback on the active involvement of the rural population.

It is recognised that telecommunication services in the rural areas often cannot be financially viable in the usual sense, but the economic returns are much more than the visible financial revenues.

However the PANAFTEL microwave trunk routes have provided the main backbone into the rural areas and the introduction of spur routes to the trunks will assist in extending the penetration of telecommunication services to the rural population.

SATCC has included Projects 5.2.3 and Project 5.3.2 and 5.3.3, rural telecommunications projects for Botswana and Lesotho respectively in order to utilise fully the PANAFTEL backbone infrastructure and increase the national subscriber base to the scattered population of the two countries.

The rural telecommunications project will test and try one available technology, identify the logistic constraints, maintenance etc. The results will enable development of a suitable structure for operation and maintenance of the rural network and selection of appropriate technologies.

7. RADIO AND TELEVISION BROADCASTING

Although Africa has about 23% of the worlds land surface and about 10% of its population it has less than 30% of the worlds sound broadcasting transmitters and the coverage is generally very limited.

While television has been introduced in some SADCC countries its coverage is far more limited.
Whereas the PANAFTEL microwave radio systems have been planned with the capability to transmit sound and television signals, most SADCC countries are lagging behind in the planning and development of the necessary radio and television broadcasting infrastructure in order to be able to use this facility in the PANAFTEL microwave radio systems.

It would be appropriate therefore for SADCC to include in its programme radio and television broadcasting projects in order to develop this important service in the region.

8. MARITIME COMMUNICATION

Maritime Communications in SADCC countries viz Angola, Mozambique and Tanzania provide inadequate facilities for efficient and reliable telephone and telex traffic from the landlocked countries of the region to either the ports of the ships approaching the SADCC coastline.

SATCC Projects 5.1.1 (T-MC- 1 and 2) and 5.5.6 have been included in the programme in order to rehabilitate and upgrade this very important facility in the region which will bring added efficiency to the operation of the ports and freight services.

A similar project proposal is being planned for Tanzania.

SATCC strategy is to assist in providing finance for project implementation and co-ordinate technical proposals so that the facility will be compatible for interconnection to the rest of the regional network.

9. MANUFACTURING

So far very few telecommunications equipment are being manufactured in the region.

Although foreign sources will be required for much highly specialised equipment, these is no doubt that some basic material can be manufactured or assembled in any of the SADCC countries on a competitive basis to ease foreign exchange problems.

Research and planning should be directed towards establishment of telecommunications industries initially to meet the needs of the region for less complex equipment, and eventually phasing into production of more complex equipment.

SATCC Project 5.0.6, Study on the Development of a regional manufacturing strategy, has been included in the programme in order to initiate joint efforts from co-operating partners and countries in the region for regional manufacturing of some telecommunications equipment.

10. DEVELOPMENT PLANS

Telecommunications services in the SADCC countries are widely variable in quality. Interface problems between equipment are common with resultant degradation of service. Equipment frequently stands idle because other interconnecting equipment is not ready for service.

One reason for such problems is that some Administrations have not evolved a fundamental Plan to guide their development programmes.

In the region only about four (4) countries have a comprehensive and updated Fundamental Plan for at least Seven Years up to the 2005 covering technical, investment and execution plans.

The growth of the population and trade between the SADCC countries will make it necessary for a more organized approach to telecommunications planning.

Hence as a first step to the successful planning of the regional network SATCC has the following targets during the next few years:

- assist in procuring technical assistance for the preparation and or development of a Fundamental Plan for each of the other SADCC member states

- review, modify and upgrade the Fundamental Plans for regional interconnection and standardisation.

- special training given to planning staff to ensure development of self-reliance in planning.

11. SOURCES OF FINANCE

The principal sources of finance have been multilateraland bilateral financing institutions. In addition, there have been some grants and supplier credit arrangements.

Financing from the World Bank and the ADB has been obtained by those telecommunications Administrations having autonomous status or being rum on a truly commercial basis.

Countries with Government type telecommunications managements tend to get financing from bilateral sources and limited multilateral sources such as the EEC.

A few multicountry projects have been financed by out-right grants by donor countries.

Most of the projects previously identified and included in the SATCC programme have been financed as per Table 3; whereas the principal suppliers of equipment to the region are as per Table 4.

Unfortunately there is still a few important links that have yet to find financing, viz: SATCC Project 5.1.1 (T-PT-4), 5.5.3, 5.8.4 and 5.0.4.

TABLE 3

Principal financing institutions for SADCC projects

Financial source	type of credit		
	loans	supplier credit	grants
Canada	-	-	x
U.S.A	-	-	-
France	x	x	-
Italy	x	-	x
Japan	x	-	-
Arab Funds	x	-	-
World Bank	x	-	-
ADB	x	-	-
U.K.	-	-	-
Norway	x	-	x
FRG	x	-	-
EEC	-	-	x

TABLE 4

Suppliers of telecommunication equipment to the SADCC countries

Country	Microwave	International Exchanges		Satellite earth stations
		telephone	telex	
Canada	-	-	-	x
U.S.A.	-	-	-	x
Japan	x	x	-	x
Italy	x	x	-	(x)
Norway	x	-	-	-
Sweden	-	x	x	-
FRG	-	-	x	x

As part of the regional execution plan SATCC had undertaken and organized the Technical Conference on Telecommunications 10 Year Development Plan in April 1987.
A revised and updated draft Development Plan is available for consideration for continued assistance from our co-operating partners.

To assist further with the regional execution plan it is proposed to prepare Development Plan Reports and organize a Technical Conference on rehabilitation and expansion of telecommunications services in Angola and Tanzania in order to upgrade the telecommunication infrastructure in these two countries for easy flow of national, regional and international traffic.

A similar effort should also be carried out for a Ten Year Development Plan for rural telecommunications in the region.

12. CONCLUSION

An attempt has been made above to give an overall view of the operations and investment priorities of the SATCC telecommunications programme as it exists and the suggestions necessary for better utilisation of the regional network.

The proposals put forward for resolution of the problems are mostly technical in nature but need financial support for implementation.

It is borne in mind that a lot of resources, in financial and human terms, have been invested so far in the present network but still an extra effort is required to both operate, maintain and complete the missing links to the regional network.