



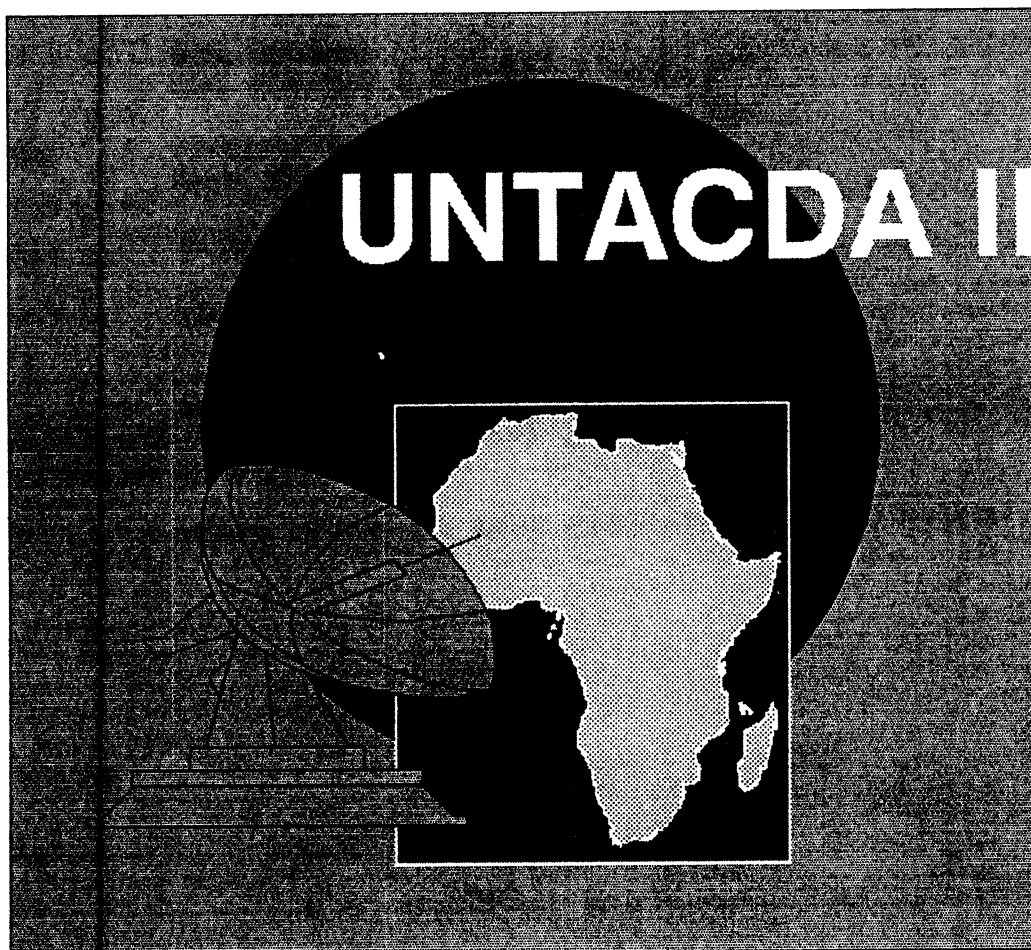
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TELECOMMUNICATIONS AND ECONOMIC DEVELOPMENT IN AFRICA

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TELECOMMUNICATIONS AND ECONOMIC DEVELOPMENT IN AFRICA

I. INTRODUCTION

1. The role of telecommunications and related information technology in today's societies is rapidly becoming crucial, not only in national and regional socio-economic development and trade relations, but also in political consolidation. In certain industrialised countries, between 30 to 50 per cent of the work force is employed in information related activities. By the year 2000, over 60 per cent of EEC employment will be strongly information related. It is estimated that by the same year, two thirds of the wealth of developed countries will be generated by information related activities.

2. Telecommunications and related information technology has thus become a major competitive sector in national, subregional and regional socio-economic, trade and political development strategy.

3. A reasonably reliable telecommunications sector is crucial to the sustained economic recovery of the country. The main linkages between telecommunications and economic recovery are (a) the requirements of business and government in a market economy for timely, accurate, and reliable information to determine the state of play in the market, to identify potential customers and suppliers, and to determine competitive prices; (b) telecommunications as a prime medium for transmitting information quickly, cheaply, and easily; (c) the cost to the economy of foregone economic opportunities due to an inadequate and unreliable domestic and international telecommunication network; (d) the financial cost to the country to operating a loss-making telecommunications network; and (e) the sector's importance as a major foreign exchange earner. Reliable communication capabilities are especially important for financial, tourism, mining, transport, service, and export-oriented business activities in the country and are becoming increasingly important in the sale and distribution of agricultural products.

4. The above in fact is a statement of telecommunication policy in Tanzania and amply demonstrates that telecommunications is generally recognized as vital to the economic activities in Africa. Along with the other aspects of the national infrastructure such as transport and energy, telecommunications is recognized as one of the key competitive factors in the world economy. For instance, the "just-in-time" concept of management, which is acknowledged as one of the innovations of modern management, is practical because of advances in telecommunications technology which enables computers to "talk" to each other, irrespective of distance. The revolution in information and communications technologies makes knowledge the new competitive resource.

5. It is therefore encouraging that African governments have already recognized the importance of telecommunications in their economic development. It is for this reason that in 1971, the Pan-African Telecommunications Network (PANAFTTEL) was established by the Summit of the OAU Heads of State and Government. Two years later (1973), the PANAFTTEL Coordinating Committee composed of the OAU, ECA and ITU was created to coordinate all aspects of the development of the PANAFTTEL Network. When the United Nations Transport and Communications Decade for Africa (UNTACDA) was declared for the years 1978-1988 with the aim of promoting the establishment of integrated regional transport and communications networks to enhance the social and economic development in Africa, PANAFTTEL became part of the UNTACDA programme.

6. An evaluation of the UNTACDA programme in 1988 showed that some measure of success had been achieved both in the expansion of the network and in the mobilization of financial resources in that out of an estimated total of US dollars 3,078 million required to implement the 232 telecommunications projects, US dollars 615 million (20%) was realised. This should be seen as a fairly good measure of success especially when viewed in light of the then prevailing serious economic crisis in the countries during the 1980s, which still persists in the 1990s.

7. However, despite the concerted efforts made within the framework of the UNTACDA programme in the 1980s, the level of telecommunications development is still far below what is needed for sustainable development. The total number of direct exchange lines (DEL) in Africa was estimated at 4.3 millions in 1988, which translates into an average density of 0.7 direct exchange lines for every 100 inhabitants in the continent. Compared to Asia with an average density of 3.5 DEL/100 inhabitants, Latin America with 5.87 DELs/100, Europe at 22.8 DELs/100, and North America with 32.8 DELs/100, it is evident that Africa still has a large gap to cover. For Tanzania, the average telephone density was 0.3 lines per 100 inhabitants in 1991, even far below the regional average.

8. This inadequate situation is further aggravated by the fact that over 80% of the available telephones are concentrated in Dar-es-Salaam and other urban areas which together account for only 15% of the population of Tanzania. This means that the rest of the population, who in fact account for over 80% of the economic production, have an average density of 0.05 lines per 100 inhabitants. Unfortunately, the disparity between urban and rural distribution of telephones is not limited to Tanzania only; in fact, the case of Tanzania is better than in most African countries.

9. In 1988, following an in-depth evaluation of the UNTACDA I programme, the Conference of African Ministers of Transport, Communications and Planning decided to continue the development of transport and communications within the framework

of a second UNTACDA programme to be implemented over the last decade of this millennium. This programme, called UNTACDA II, was launched by the United Nations General Assembly at its 40th Session in December 1991 in order to enhance the achievements made during UNTACDA I; that is to establish an efficient integrated transport and communications system as a basis for the physical integration of the continent.

10. Thus within the framework of UNTACDA II, the countries, the regional political and economic organizations, the development financing institutions, the sub-regional economic groupings, private operating organizations and partners in the African development process, are expected to re-double and unify their efforts with a view to improving transport and communications (including telecommunications, broadcasting and postal services) through the implementation of approved programmes.

11. The strategy for the telecommunication component of UNTACDA II programme was developed by the Working Group which was set up within the framework of UNTACDA II by the Ministers. The Working Group on Telecommunications and Broadcasting consists of the following organizations: International Telecommunication Union (Chairman), Pan-African Telecommunication Union, Organization of African Unity, African Development Bank, Union of National Radio and Television Organizations in Africa, United Nations Educational, Scientific and Cultural Organization and the Economic Commission for Africa.

12. The objectives for the telecommunications sector component of UNTACDA II programme are summarized in the following Chart.

13. The strategy of the UNTACDA II programme for the development of telecommunications in Africa may be summarized as focus on management. The challenge to Africa is to manage more effectively the changes in the industry: technology, human resources, finance, organization, policy, etc. At the centre of all these endeavours should be the management of human resources, which form the basis for all other aspects. Policy changes, however brilliant, can only be implemented by the people of the organization. Technology exists but can only be fully exploited on a sustainable basis through well-managed personnel. Liberalization can only succeed if there are competent managers in the new liberalized market.

UNTACDA II OBJECTIVES FOR TELECOMMUNICATIONS

- (i) Management, development and rational utilization of human resources;
- (ii) Maintenance, rehabilitation and modernization of existing telecommunication infrastructural facilities;
- (iii) Improvement in the management of telecommunication services;
- (iv) Establishment of effective and operational planning units within national telecommunication administration;
- (v) Establishment, harmonization and implementation of tariff agreements at subregional and regional levels;
- (vi) Promotion of transiting of a high percentage of intra-African communications through centres in Africa by utilizing the installed PANAFTEL Network;
- (vii) Development of research and manufacturing capacity;
- (viii) Completion of the missing links of the PANAFTEL Network;
- (ix) Implementation of the RASCOM project;
- (x) Strengthening of the Pan-African Telecommunications Union (PATU);
- (xi) Provision of services for special users such as news agencies, air transport, broadcasting and meteorological services;
- (xii) Extension of services in to rural areas;
- (xiii) Promotion of institutional restructuring of existing organizations for improving operational efficiency and the process of commercialization of these organizations;
- (xiv) Promotion of new services, particularly those which deal with data communication and information, in order to support regional and international trade.

14. The pressure for change derives from both external and internal sources. External pressure comes in the form of structural reforms advocated by financial institutions and the resulting competition in the liberalized market. Internal pressures are generated by the need to develop and retain the indigenous personnel required for sustainable development. Thus change must come to African telecommunications, first in the form of policy which should then create the right environment for organizational restructuring that in turn will lead to effective management for development. This does not mean that the need to complete the missing links is neglected. On the contrary, improved management of telecommunications may be expected to speed up completion of the missing links.

15. This paper explores in the next section the role of the Telecommunications Operating Companies (TOCs) in the development of telecommunications in Africa which, we believe, depends more on the capacity to manage than on availability of financing resources, important as the latter may be. The third section identifies some of the key technological advances and their implications on future development.

II. THE ROLE OF TELECOMMUNICATIONS OPERATING COMPANIES IN THE DEVELOPMENT OF INDUSTRY AND SOCIETY

16. The attainment of sustainable socio-economic development has been the collective goal of Africa ever since the establishment of the Organization of African Unity in 1963. The various strategies which were subsequently drawn to achieve this goal were all based on the realization that, given the large number of small nation states in Africa, sustained growth and development could best be achieved through economic cooperation and integration that expands their productive possibilities and market opportunities. As a result, the countries would exploit and trade in many of their abundant natural resources in an expanded market space. In fact, Article II of the Charter of the Organization of African Unity which was adopted in 1963 called for Africa's economic integration as a prerequisite for political unity and stipulated that, among other things, member States should coordinate and harmonize their policies on economic co-operation, including trade, industry, transport and communications.

17. Africa's deep economic crisis in the 1980's and the movement towards a world economic system dominated by trading blocs have lent additional credibility to the option of regional economic integration as the only viable approach to transformation and development. A disarticulated and excessively extroverted economic space with narrow national markets with no complementarity between their production structures cannot sustain viable economies. A meaningful industrial take-off and a minimal

technological base for a modern agricultural sector can only be achieved within an integrated regional market where there is free mobility of production factors, goods and services and persons. The Abuja Treaty (1991) establishing the African Economic Community provides for the necessary institutional framework and mechanisms for this to happen through a realistic and pragmatic stage-by-stage approach towards the establishment of the Community.

18. The successful implementation of the Abuja Treaty calls for measures to accelerate integrated development simultaneously in the integrative areas of physical infrastructures (transport, communications and energy), production sectors (agriculture and industry), and trade liberalization and facilitation. All these must be accompanied by building competent institutional framework at subregional and regional levels which will gradually undertake collective economic activities on behalf of all member States as the integration process takes form.

19. The Abuja Treaty is a logical response to the need for regional cooperation and integration in Africa as the fundamental basis for achieving sustainable development of the continent. The protocols which have been drafted as steps in implementing the Treaty include that on transport and communications, which, along with power and energy, form the physical infrastructure the development of which is sine qua non for economic integration of the continent.

20. Recent studies on world competitiveness have identified education and infrastructure to be the most critical factors in world economic competition, and investment in these sectors form the basis for future competitiveness. Together with the market structure, these are the foundation for future growth of the other sectors of the economy such as agriculture, mining and manufacturing. In the current development environment where communications technology has made all factors of production, including natural resources, easily traded among nations, only the educated workers and the physical infrastructures are unique to the country.

21. Education develops the human capital skills which are needed for innovation to invent new products, organize production processes, develop markets and service customers. The physical infrastructure capital is embodied in plants and equipment, power grids, transport and communications networks, housing and sanitation systems.

22. However, having an educated human capital and sound infrastructure are necessary but not sufficient conditions for development; these must be accompanied by the efficient utilization of these endowments.

2.1 Regional Telecommunications

23. The role of telecommunications in the achievement of African integration is paramount, in fact the African telecommunication industry has been in the forefront of regional cooperation and integration. The PANAFTTEL network was conceived as a framework for developing an integrated telecommunications system in Africa in order to increase communication among African member countries. Similarly, the recent creation of the RASCOM Organization is a result of regional cooperation aimed at integration.

24. The success of these two regional ventures depends entirely on the role of the TOCs. The PANAFTTEL Network is made up of the individual national networks - which are managed by the TOCs. The routing of traffic, the application of tariffs, maintenance and operations of the network are controlled by the TOCs. Thus, the availability of telecommunications, and hence the effectiveness of African trade, is dependent on the role of the TOCs. In other words, integration cannot be achieved unless the the national components exist to be integrated.

25. It is therefore advantageous for the TOCs to realize the important role they play in the wider context of Africa's development, even though their operations are nationally centred. This important role gives them advantage to negotiate with the government and the financial institutions in obtaining the necessary resources for development. However, it also places upon them the responsibility to provide reliable services and respect inter-country agreements.

26. It is gratifying to note that the Eastern and Southern Africa region has largely implemented the PANAFTTEL Network and achieved a high level of inter-connectivity among the member States. The efficiency of the system has definitely benefited from the African Regional Telecommunications Conference (ARTC), which provides a practical forum for the TOCs in the region to discuss operational issues.

27. Regarding RASCOM Organization, only five countries in the subregion have so far joined in this regional venture; these are: Ethiopia, Kenya, Swaziland, Uganda and Zimbabwe. It is expected that other countries would soon join in this truly regional venture in the exciting field of satellite communications.

2.2 Rural Telecommunications

28. Obviously, regional integration would be meaningless if the national components are not well developed. This to a large extent explains the under-utilization of the PANAFTTEL Network high capacity backbone. Since the majority of the population in Africa lives in the rural areas where the greater proportion of

economic production is carried out, it is incumbent on the TOCs to extend services to the rural areas. Recent advances in technology have drastically reduced the cost of providing rural services to a level which should be feasible for most countries. In addition, in view of the universally accepted need for such service extension, the government should be convinced to provide incentives for the TOC's to provide rural telecommunication services.

29. Earlier on, the disparity in telephone density between urban and rural areas was noted. In practical sense, it will not be possible for average telephone density in Africa to increase until the services are extended to the rural areas. Proof of this can be seen from the developed countries where advanced telecommunication systems have penetrated practically all economic activities.

III. MODERN TECHNOLOGICAL DEVELOPMENTS

30. Telecommunications and related information technology are changing very rapidly with new and enhanced services which necessitate switching over from analogue to digital technology. And there is no going back on this change. Indeed the debate is not about whether the new digital technologies should be adopted or not, it is basically on how the new technologies and new services should be adopted such that the existing analogue technologies in which most African countries have invested so heavily can continue to be for use while they strive to adapt, internalize and use the new digital technology.

31. While there are other technology changes with impact on African telecommunications industry, the development related to digital technology is certainly one of the most dominant. The African telecommunications organizations are in fact incorporating digital technology in their systems as fast as their resources can allow.

32. Many African countries have analogue systems as the backbone of their telecommunication networks with a good number installed in the mid 1980's. Thus, most of these networks are still in their useful economic period based on the normal amortization period of 20 to 25 years. But the problem which the countries face now is that the production of analogue equipment is being phased out by the manufacturers and spare parts are becoming increasingly difficult to obtain, culminating in serious maintenance problems. The telecommunications industry is consequently faced with the need to change from the analogue systems to digital technology through the process generally termed product migration.

33. Realizing the inevitability of change, a number of countries started to introduce digital systems in their networks, such that out of the 5,135 local telecommunication

exchanges in Africa, 483 or 9.4 per cent were digital in 1988 (Table 1). In terms of international exchange capacity, out of the total capacity of 5,212,733, approximately 29 per cent were digital. Twenty-eight countries have already started to introduce digital technology in their international transit centres.

34. One of the African countries which has started to introduce digital technology in its telecommunications network is Ethiopia:

Ethiopia has embarked on a planned and systematic introduction of digital technology in its national telecommunications network.

For example during the years 1990/1991 and 1991/92 the number of subscriber lines connected to digital exchanges increased from 41,843 lines to 48,928 lines, an increase of 7,085 lines or 17% per cent. In the international telephone switching, a considerably larger growth of 20.4 per cent was achieved in traffic due to the introduction of the International Direct Dialling (IDD) system. The whole of Ethiopian International Transit Centre is digitalized.

Ethiopia has started digitalizing the main urban areas and to transfer the replaced analogue equipment to the rural areas where they will be installed to provide a more superior service compared to the service provided by the manual exchanges. This arrangement offers the most economic method of introducing digital technology in the country while at the same time still continue to put to good use the existing analogue systems.

Ethiopian Telecommunications Authority, Annual Statistical Bulletin, 27th Issue, 1991/92

35. As regards the International Switching Exchange Capacity, Table 2 shows the rate of digitalization in 1988 by subregion and the Africa regional total.

TABLE 1
DISTRIBUTION OF LOCAL EXCHANGE SYSTEMS BY SUBREGION IN AFRICA

SUBREGION	AUTOMATIC						MANUAL		OTHER (PABX)		TOTAL	
	STEP-BY-STEP		CROSSBAR		DIGITAL		Number	Capacity	Number	Capacity	Number	Capacity
	Number	Capacity	Number	Capacity	Number	Capacity						
East and Southern	182	307 205	254	486 598	154	242 348	1 24548	86 469	-----	-----	1 835	1 122 620
West	42	57 600	395	547 363	29	62 844	750	22 967	66	228	1 281	690 992
Central	11	10 448	97	157 757	30	48 276	102	9 931	9	773	249	227 185
North	----	----	496	1 946 302	271	1 157 014	1 003	68 620	----	----	1 770	3 171 936
Total Per cent	235	375 253 7.2%	1 242	3 138 020 60.2%	483	1 510 482 29.0%	3 100	187 977 3.6%	75	1 001	5 135	5 212 733 100%

Source: UNTACDA II 1991-2000, Telecommunications Sector

TABLE 2
INTERNATIONAL TRANSIT CENTRES (by Subregion)
Rate of Digitalization

SUBREGION	CAPACITY					
	Total/Installed (a)	Digital (b)	Digitalization Rate (b/a) x 100	Connected Total (c)	Digital Connected (d)	Unused Digital Capacity (1- d/b) x 100
Eastern and Southern Subregion	31,225	20,612	66%	16,722	9,985	52%
Central Africa	4,195	2,340	55%	2,003	777	66.8%
West Africa	11,185	6,162	55%	4,848	2,083	66.2%
North Africa	36,261	21,381	59%	13,962	5,761	75%
Total	82,866	36,535	56%	38,435	19,506	69.2%

UNTACDA II 1991-2000 - TELECOMMUNICATIONS SECTOR

36. Regarding transmission systems (Table 3) of the 240,532.30 km length of transmission, only 11,137.15 or 4.63% is digital microwave. The rest is either Analogue Microwave (46.36%), or cables (18.06%); overhead lines (9.82%) and Radio HF (19.10%). Digitalization on the Transmission Systems is slower than in the Switching Systems.

TABLE 3
TRANSMISSION SYSTEMS IN THE AFRICAN TELECOMMUNICATIONS NETWORKS (1988)

System Subregion	Microwaves			Cables	Overhead lines	Radio HF	Grand Total
	Analogue	Digital	Total				
Western	43 043.5	3 615.40	46 658.9	2 085.3	11 992.0	9 969	70 705.2
Northern	15 645.9	2 671.40	18 317.3	36 626.5	0.0	0	54 943.8
Eastern	18 107.5	2 158.60	20 266.1	67.3	2 851.0	0	22 914.0
Central	11 311.1	809.45	12 120.5	510.0	135.0	28 530	41 295.5
Southern	23 400.9	1 882.30	25 283.2	4 155.1	8 632.5	7 443	50 673.8
African Total	111 508.9	11 137.15	122 646.0	43 444.2	23 610.5	45 942	240 532.3
Per Cent	46.36	4.63	50.99	18.06	9.82	19.10	100.00

Source: RASCOM Feasibility Study Volume 3

37. The digital technology in telecommunications has opened up the industry to many types of possibilities, both in terms of the increased range of services offered to the customer, and in terms of system configurations. Technological advances have resulted in cheaper and more reliable equipment and services. They have also made it possible to create new structures, thus obviating the need for traditional regulated monopolies.

38. The implications of technological changes on the economy as well as society at large are enormous. This paper will only highlight those which are directly under the control or influence of the TOC'S.

3.1 Deregulation

39. After thirty years of independence, it should be evident that government cannot, and indeed should not, do everything in the country. The "dirigist" approach to development has largely failed. Government should resume the task of governance and give responsibility to society to develop itself. Over-regulation and involvement of the State has tended to retard development.

40. In many African countries, telecommunications regulatory functions are carried out on behalf of the governments by the telecommunications operating entity as exemplified by the following:

The Uganda Posts and Telecommunications Corporation is an independent institution, established by an Act of Parliament to provide postal and telecommunications services within Uganda, between Uganda and the world and to regulate and control radio communications operated from or received in Uganda.

41. The phenomenon of deregulating or liberalizing telecommunications and the intense heat of commercialization of telecommunications services, have all compounded the dilemma and problems of the African countries in their efforts to develop telecommunications systems and services, particularly because almost all the countries are still grappling with the basic issues of providing universal access to basic telephone services.

42. The proponents of liberalization contend that unregulated competition or the free market structure offers several economic advantages, for example:

- it promotes the efficient management of telecommunication suppliers and operating entities;
- forces prices to come closer to costs and enable consumers benefit from lower rates;
- encourages innovation and quality control;
- increases the number of services and suppliers hence customers have expanded choice;
- has positive effects on a country's economy by strengthening its position in the world market.

43. It is further argued that the information technology is beyond regulatory control. It cannot be managed, and that regulation has not kept pace with technological change and has a conservative bias. The carriers argue that regulation prevents them from operating their business in the most efficient manner possible. And other regulatory restrictions slow down the adoption of new technologies and inhibit flexible responses to market demands.

44. While liberalization would open greater markets for industrialised countries and hence the aggressive promotion by those countries of liberalization or privatization to open up the market in developing countries for cut-throat competition amongst the traditional manufactures of equipment, the majority of developing countries on the other hand, view the policy of uncontrolled liberalization as spelling disaster especially as most African countries are beginning to delve into the sacred area of local manufacture of telecommunication equipment in abid to enhance their self-sufficiency and secondly they are grappling with the problems of providing telephone universally.

45. Several factors contribute to the fear of developing countries to the concept of unregulated liberalization:

- (a) Liberalization will allow manufactures and private operating agencies to enter into separate agreements with technology users in developing countries (the business and industrial sectors, banks, the NGOs etc.) to the detriment of national development priorities.
- (b) In the area of international services developing African countries ~~will~~ incur higher costs of administration of external routes and accounts ~~as~~ they will be forced to deal with many different international operating agencies.

- (c) Efforts and achievements made by developing countries to standardise equipment and reduce maintenance and manpower costs will be wiped out.

46. These fears are well founded since technological innovations have created a number of new configurations for competitive delivery of telecommunication services. Technically four main types of competition exist, but they may be combined to create many possibilities.

- (i) Brokers may purchase transmission capacity from a carrier and resell that capacity to the end user. They may also provide the interconnection with the telephone company network;
- (ii) Resellers may add enhanced services to their basic transmission capabilities; these value-added services would include computer processing of information;
- (iii) New carriers could establish their own telecommunications facilities and sell their services in competition with the established carriers;
- (iv) Finally, privately-owned networks which by-pass the public network could be established.

47. These types of innovative technological compositions have sensitive economic and political implications to developing countries and indeed threaten the viability of the African telecommunication carriers since they create pressures for them to drastically cut their prices and tariffs in order to compete with the above complex competitive methods. The latter two possibilities are especially troublesome for the fragile African telecommunications carriers, because they are specifically intended to by-pass the facilities of the public carrier and thereby avoid their interconnection and transmission charges. This sort of by-pass competition is a development that is completely not in the best interests of the public telecommunication carriers in developing countries and in particular African countries. The gravity of this scenario should be viewed in the light of the large investment which has been made by the developing countries and their telecommunications carriers and the associated heavy interest charged on borrowed funds for investment.

48. Uncontrolled liberalization may also have adverse consequences for consumers and the developing countries. Universal access is the cardinal objective and the cornerstone of the African telecommunications systems. However, without regulation

carriers may be reluctant to undertake unprofitable services such as the provision of basic services to rural and remote locations. There is also the fear that residential and rural tariff rate will escalate as costs are shifted to those who have no "technological by-pass alternatives". Thus basic service rates may increase to a point beyond the reach of many African subscribers.

49. Regulation in telecommunications sector and the related information technology is an area in which the economic and political stakes are high. Regulatory objectives include universal access as well as substantial national/local ownership and regional development. However, the regulatory burden has to be reduced. Although the rules of competition may be determined, technical standards set and the public interest protected, regulation should strive to be as unobstructive as possible. Whenever possible, the market place should be allowed to operate freely.

50. In view of the proliferation of services as a result of technical advances and/or market oriented regulatory and policy environment, it will be essential to separate the regulatory functions from the operators. It is therefore recommended that a separate and independent regulatory body be set up in each country in order to, inter alia, carry out the following responsibilities:

- (i) Licensing operators:
- (ii) Establishment of technical standards and rules for operators;
- (iii) Coordination of the use of frequencies in the country for various operators including radio and broadcasting services, mobile telephone systems.

3.2 Restructuring

51. The institutional and organizational structures of most Telecommunications Administrations in Africa are generally similar with slight variations here and there. Most of the authorities for telecommunications sector are vested in the Ministries - either the Ministry of Transport and Communications, Ministry of Information and Telecommunications, Ministry of Works and Communications or Ministry of Posts and Telecommunications etc. Most are wholly government - owned statutory corporations or public parastatals. A few like in Gambia, Mauritius, Seychelles, Sierra Leone are companies but under the supervision of Ministries. Most are administered by a Board of Directors appointed by either the Head of State, or the relevant Minister. The Boards operate under a Chairman who is also appointed by the Head of State or by the Minister.

52. The status of Telecommunication Authorities in Africa (Table 4) indicates that of the 50 countries examined in 1988 only thirteen (13) countries namely Angola, Cameroon, Chad; Equatorial Guinea; Gabon; Ghana; Liberia, Madagascar, Mauritius; Nigeria; Seychelles; Sierra Leone and Togo had recognised private operating agencies or companies. The rest were either the responsibilities of the Ministries or were recognised parastatal corporations or just departments. In 1993, Rwanda opened up to a private operating company (RWANDA TEL S.A.). This makes a total of fourteen countries which have allowed private operating companies to compete with the national public telecommunications administrations.

53. This indicates that the African Telecommunications Sector is slowly opening up to private competition. What the African countries need to do is to introduce appropriate policies and regulatory framework which will permit smooth transition from public monopolistic structures and to involve the private sector, in the provision of telecommunications services.

54. The functioning of most PTCs is constrained or influenced by the many Ministries/institutions that have to oversee or to decide in one way or another on resource provision to the PTC entity. In one particular example, the national PTC is for some reason or another answerable to six different ministries and institutions for example:-

<u>Ministry/Institution</u>	<u>Function</u>
The President's office	For appointment of chairman of the Board of Directors, the PTC's Managing Director.
Ministry	For policy determination, establishment of guidelines and performance evaluation. Review and approval of corporate plans, budgets, financial statements etc.
Ministry of Finance & Planning	For review and approval of plans and capital investments, annual budgets etc.
Ministry of Labour & Power	Monitoring of training programmes, review of labour productivity and production targets; labour agreements and disputes etc.
National Assembly	Review of performance, Audit reports; summons PTC managers to explain poor performance.
National Investment Bank	For provision of credit and review performance etc.

TABLE 4

Status of telecommunication authorities

Country	Responsible Authority	Recognized private operating agencies
Algeria	Ministere des Postes et Telecommunications Direccao National de Correios e	ENATEL; EPTEL
Angola	Telecommunicacoes Office des postes et telecommunications (OPT) Botswana	
Benin	Telecommunications Corporation (BTC) Office National des telecommunications	
Botswana	(ONATEL)	
Burkina Faso	Office national des telecommunications (ONATEL)	INTELCAM
Burundi	Direction des telecommunications	
Cameroon	Emprasa des Correiso Telecommunicacoes	TTT
Cape Verde	Societe centrafricaine des telecommunications (SOCATEL)	
Central Afr. Rep.	Office National des Postes et Telecommunications (ONPT)	
Chad	Office des Postes et Telecommunications (OPT)	
Comoros	Office national des postes et telecommunications (ONPT)	GETESA
Congo	Office national des telecommunications (ONT)	TIG
Cote d'Ivoire	Office des postes et telecommunications	BTS
Djibouti	National Telecommunications Organization (ARENTO)	
Egypt	Direccion General de Correos y de Telecommunicaciones	
Equatorial Guinea	Ethiopian Telecommunication Authority (ETA)	LTC
Ethiopia	Office des postes et des telecommunication (OPT)	
Gabon	Gambia Telecommunications Co. Ltd. Gamtel)	
Gambia	Posts and Telecommunications Corporation	STIM
Ghana	Direction generale des telecommunications	
Guinea	Direccao General dos Correios e das Telecomunicacoes	
Guinea Bissau	Kenya Posts and Telecommunications Corporation	MTS, OTS
Kenya	Lesotho Telecommunications Corporation (LTC)	
Lesotho	Ministry of Posts and Telecommunications	NTTEL
Liberia	Posts and Telecommunications Corporation	
Libya	General Post and Telecommunication Company	
Madagascar	Direction des telecommunications	CAWPLC SLET
Malawi	Posts and Telecommunications Department	
Mali	Societe des telecommunications du Mali (SOTELMA)	
Mauritania	Office des postes et telecommunications	
Mauritius	Telecommunications Authority	SATIT
Morocco	Office national des postes et des telecommunications (ONPT)	
Mozambique	Telecommunicacoes de Mocambique (TDM)	
Niger	Office des postes et telecommunications	
Nigeria	Ministry of Communications	
Rwanda	Direction Generale des Telecommunications (DGT)	
S.Tome & Principe	Companhia Santomenese de Telecomunicoes (CST)	
Senegal	Societe Nationale des Telecommunications du Senegal (SONATEL)	
Seychelles	Ministry of Finance - Telecommunication Section	
Sierra Leone	Sierra Leone National Telecommunication Company (SLNTC)	
Somalia	Ministry of Posts and Telecommunications	
Sudan	Sudan Telecommunications Public Corporation (STPC)	
Swaziland	Pots and Telecommunications Corporation	
Tanzania	Tanzania Posts and Telecommunications Corporation (TPTC)	
Togo	Office des postes et telecommunications du Togo (OPTT)	
Tunisia	Direction generale des communications	
Uganda	Uganda Posts and Telecommunications Corporation (UPTC)	
Zaire	Office National des Postes et Telecommunications du Zaire (ONPTZ)	
	Posts and Telecommunications Ltd.	

55. It is needless to state that this arrangement has implications on the efficiency of the PTC concerned. This situation can be corrected by restructuring of the Telecommunications Administrations to operate more independently and efficiently.

56. Most African Telecommunications organization structures have been operative for many years. Due to changes in the telecommunication environment, technology, network development and growth of these organizations, it is only fair and natural to review these organizational structures in order to make them more relevant to the expanded networks and changed Telecommunication environment.

57. The financial squeeze on the countries, either as a result of the deteriorating economies or as conditio sine qua non for outside assistance through Structural Adjustment Programmes (SAPs) or Economic Recovery programmes (ERPs), has exerted pressures for reduction of public financial support to State parastatal organizations, especially in railways and air transport, but also in posts and telecommunications. Consequently the countries are faced with the difficult choice to either divest of these operations or restructure them to operate on commercial market oriented basis.

58. In the African context, divestiture implies the sale of public corporations to the private sector, often foreign, given the limited local private capacity for financial intermediation. Much has been written on this subject; suffice it to stress that such exercise should be carried out with utmost care. Recent experiences in the other developing countries, most notably in Mexico with the sale of Telmex, have demonstrated that hasty sale of public assets might result in a "give-away" to foreign investors. While some posts and telecommunications administrations may be attractive for privatization, careful valuation must be carried out with the public interest in mind.

59. While restructuring of public enterprises may sound a more attractive alternative to outright divestiture, it should nevertheless be carried out with equal caution. Such restructuring may involve contracting out in part or in whole the operations of the enterprise. Whole contracting can be in the form of contract plans which are currently being introduced in certain African railways operations, or on a long term lease basis such as in ports. Alternatively, the operations may remain under a public enterprise, but some of sub-contracted to private operators, such as supply and maintenance of PABXs and other equipment.

60. As an example of market oriented changes, take the case in Zambia. The Posts and Telecommunications Corporation Limited became a limited liability entity after incorporation by Act of Parliament in March 1988. The corporation is a wholly owned

subsidiary of Zambia Industrial and Mining Corporation Limited (ZIMCO), which is a share capital corporation of governments, private companies and individual share holders. The new market orientation has focused the attention of management on the customer as enunciated by the Managing Director in his review of operations in 1990/91.

I am also elated to report that for the first time in the history of the Company, Management sat down to promulgate a company philosophy by way of a Mission Statement which will be the basis of our approach to business. Through this, the work-force will commit itself to a complete transformation of the Company into a truly commercial entity. The Mission Statement is enunciated as follows:

Our mission is to provide and maintain universal high quality postal and telecommunications services that satisfy customers' needs by operating as a viable and cost effective business enterprise which will create maximum share holder value while providing rewarding opportunities for our human resources and promoting good corporate citizenship.

Annual Report 1990/91, PTC LTD, (Zambia)).

IV. CONCLUSION

61. The African Telecommunications Sector is facing a very challenging and complex future. A number of internal constraints and international forces confront the telecommunication Administrations and operators as well as the African governments. The present policies, institutional and regulatory framework, and the management practices have been questioned. This calls for drastic changes in the delivery of telecommunications services to the increasingly sophisticated consumers now demanding value-added services.

62. The new challenges that the governments their telecommunications administrations and operators face include the following:

- (a) The rapidly changing technologies which place severe strain on national economies and resources.

- (b) Restructuring of the telecommunications: need for new Policies and Regulatory frameworks.
- (c) The emerging regional economic groupings worldwide.

63. In response to these challenges, the countries must acknowledge the need for a more comprehensive and concerted approach to policy formulation, institutional and management restructuring; adoption of appropriate strategies and regulatory frameworks for the development of telecommunications. This of necessity calls for carrying out a thorough review of telecommunications sector in terms of policies and strategies in response to greater pressures for change emerging from both within and outside the region.

64. As part of the sectoral and policy review, there is need for African countries to undertake certain studies and/or measures at national, subregional and regional levels to bring to light the implications and benefits of issues like liberalization or privatization; restructuring; and how these changes can be effected to improve the performance of telecommunications sector. Such studies may include:

- (a) How the new technologies should be adopted, internalized and integrated within the existing networks.
- (b) How African countries can carry out the restructuring of their telecommunications sector to achieve efficiency and increased productivity; this may be carried out within the framework of the HRID programme.
- (c) An examination of policy, regulatory and institutional frameworks within the context of national, subregional and regional telecommunications development as well as within the global telecommunications environment.
- (d) The implications of unregulated or open competition on national telecommunications administrations/operators and users.

65. These studies are likely to invoke highly sensitive and even contentious issues, not only at national level but also internationally. The resulting policy proposals will have important social, cultural and economic ramifications at national and possibly subregional and regional levels, affecting not only governments, telecommunications administrations and operators, but also business users as well as individual users. The significance of restructuring and liberalization to all African countries is far too important for it to be carried out without full public debate and awareness of the implications and the consequences.

4.1 The Changes in Technology

66. Technology is changing at a rate which developing countries of Africa can hardly cope with. Those who plan, design and evaluate telecommunication systems in the countries are experiencing difficulties keeping up with the most recent technology developments, and yet these are the people who have to make timely decisions regarding adoption of new technologies in the networks.

67. The emerging technological changes in are international in scope, and that these technological advances are forcing a rethinking of the current market structures and policy agendas made by governments. The impact of technological innovation cannot therefore be ignored. Hence, how it performs in the emerging international market-place will depend on how quickly Africa adopts and internalises these new technologies for accelerated social and economic development.

68. While the countries are at present grappling with the problem of phasing out analogue with digital systems, the situation is compounded by the introduction of other new technologies such as fibre optics, digital mobile radio systems, intelligent networks, Integrated Services Digital Network (ISDN), Multi-Media Communication Systems, Satellite Communications systems, etc. In addition, there are issues which make matters more complex for developing countries including technology transfer issues, particularly in the soft-ware domain, and national protective mechanisms such as the use of intellectual property protection regulations which not only inhibit effective technology transfer, but also make the transfer costs prohibitive to developing countries. These protective and prohibitive mechanisms do not augur well for effective technology transfer arrangement.

69. Worse still, technological innovations within telecommunications have created a number of new configurations for the competitive delivery of services. Technically, there are a number of ways in which, the African national telecommunications networks could find themselves completely disadvantaged and excluded from potentially profitable services by new technologies, for example the use of private dedicated networks which may by-pass the public switched network thereby denying the telecommunication administrations revenue earnings. These by-pass intelligent networks could be installed by a variety of foreign suppliers or operators, and this would impact negatively on revenue earnings by developing countries.

70. Possible response to these technological innovations is for the African countries:

- (i) To enact an appropriate policy and regulatory mechanism to facilitate smooth introduction of new technologies in the telecommunication sector.
- (ii) To embark on intensive Human Resources Development and Training so as to harness technologies for Africa's benefit.
- (iii) To establish mechanism for proper planning and coordinating of the acquisition and implementation of the technology.
- (iv) To create the environment for attracting financing and investment in the telecommunications sector.

4.2 Restructuring of the Telecommunications Sector

71. As the telecommunications environment changes from the traditional basic telecommunications delivery services to more complex data and value added information systems, many countries, particularly the industrialised countries, have seen the need to restructure their telecommunications sectors so as to be able to respond much more effectively to the rapid changes in the telecommunications environment. There is an increasing shift away from direct government control of the sector to a separation between the function of policy development, the regulatory function and the day to day operations.

72. The role of the Government in the restructuring process includes the following:

- (i) The provision of an enabling environment through appropriate policies and regulatory frameworks consistent with the overall socio-economic development plans.
- (ii) To guide the process of change through government policy guidelines.
- (iii) The preparation and implementation of structural and organizational changes in the Telecommunications Sector.

4.3 Liberalization or Privatization of Telecommunications Sector

73. Telecommunications sector is increasingly volatile and there is worldwide pressure for change. Monopolies which were once assumed necessary for efficient

functioning are presently being challenged, as many countries, particularly the industrialised countries, argue that monopoly is nothing more than the ability to manipulate prices and eliminate competition unilaterally.

74. However, despite the inevitability of change due to new technologies and liberalization of telecommunications sector, many industrialised countries, including certain OECD Countries, have met the challenges of liberalization only through government sponsored strategies such as controlled competition, managed growth, regulated entry, foreign trade barriers, and direct and indirect financial incentives.

75. There is need therefore for deliberate Policy and Regulatory framework to regulate the privatization or liberalization process. The response of African countries to liberalization or privatization process of their telecommunications sectors should be guided by four principles:

- (a) A policy and regulatory framework to ensure that the benefits of the new technology and liberalization are available to all the nationals.
- (b) Access at universally affordable services must be maintained.
- (c) Largely African solutions must be sought.
- (d) African countries must remain internationally competitive.

76. In these measures, African countries may wish to draw upon the experience of certain countries which have implemented liberalization of their telecommunications sector, for example, Brazil, Canada, Mexico, U.K., USA. Where governments decide to give some priority to telecommunication expansion, the financial, commercial and technical capabilities exist today for achieving the development goals than previously possible. Africa must seize the moment.

4.4 Regional Co-operation

77. The creation of giant telecommunications companies such as the merger of certain American and European telecommunications companies has impact on the development of telecommunications in Africa, especially with regards to equipment purchasing policies and regulations. Individual organizations will find themselves more marginalised by the giant telecommunications suppliers and/or operators. One way in which they can respond in the interest of the continent is by coordinating their requirements at sub-regional or regional levels and bargaining collectively as a group. The regional telecommunication institutions, namely the Pan African

Telecommunications Union (PATU) and the Union of National Radio and Television Organizations of Africa (URTNA) have to be strengthened in terms of resources and capacity building so that the institutions can play their rightful role in coordinating certain activities. Similarly, the subregional economic groupings of PTA, ECCAS, ECOWAS and UMA must play their respective roles in coordinating subregional development.