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GENERAL NOTICE

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The Green Paper on Telecommunications Policy is hereby published by the Ministry of Posts, Telecommunications and Broadcasting for general information and comment from interested parties. Comment must reach the Ministry before 15 SEPTEMBER 1995 at the following address:

TELECOMMUNICATIONS GREEN PAPER
The Ministry of Posts, Telecommunications and Broadcasting
Private Box 1706
SAXONWOLD
2132

FAX: (011) 339 5050

7 July 1995

A GREEN PAPER FOR PUBLIC DISCUSSION

TELECOMMUNICATIONS POLICY

The Ministry of Posts, Telecommunications and Broadcasting

This Green Paper is also available in Afrikaans, Southern Sotho and Zulu.

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FOREWORD

It is my pleasant duty to place this Green Paper on Telecommunications Policy before the South African public and to invite you all to respond to its contents. The Green Paper poses a wide range of questions regarding all aspects of telecommunications policy. Your responses will assist my Ministry to formulate the Government's policy on telecommunications for the foreseeable future.

Telecommunications has become a very important part of our country's economy and society. It provides the infrastructure for the communications and information systems that can make our businesses operate more efficiently and help development to unfold more effectively. It is the telecommunications network that enables people to communicate with one another over long distances, both within and beyond the borders of our country.This network is also an important means of building democracy by giving citizens access to the information and telecommunications services that enable them to participate effectively in the decision-making processes of society.

South Africa needs a new policy on telecommunications because policy during the apartheid era systematically discriminated against the majority of South African citizens. As a result the existing telecommunications system hopelessly failed to provide universal access to the telecommunications system - let alone universal service. We need to redress the historic imbalances caused by these policies as a matter of urgency.

An information revolution is sweeping the world. There are changes occurring in technology which are causing a convergence among computing, telecommunications, video and broadcasting to form the information highway as well as the globalisation of telecommunications. These are bringing enormous changes to how economies and societies are organised across the world. We have to adapt our telecommunications policy to meet this challenge if we are to be a successful nation in this new global environment.

The development of the telecommunications facilities and services that our country needs, requires many participants and the investment of large sums of money. For this to be possible it is essential that clear policies be developed for the telecommunications environment and that a clear and solid legal and regulatory environment be established to implement those policies in an orderly and effective manner.

Our new telecommunications policy has to meet these challenges with dynamic solutions that can help unlock the social and economic potential of all South Africans. Our policy must reflect the interest of all citizens and I wish to invite you to participate in this crucial telecommunications policy making process.

Z Pallo Jordan
Minister of Posts, Telecommunications and Broadcasting.

INTRODUCTION

WHAT IS A GREEN PAPER?

A Green Paper is a consultative document. It is designed to pose the questions that need to be answered in order for Government to formulate policy. The Green Paper is not itself a statement of Government policy. A White Paper formulates Government policy.

A Green Paper is not an academic thesis nor is its function educational. It is designed to stimulate responses from the public and interested parties. It needs to provide a framework of focused policy issues for discussion. Everything about a Green Paper can form the basis of response, including the framework of issues, options and questions.

THE GREEN PAPER ON TELECOMMUNICATIONS POLICY

The main reason for producing a Green Paper on Telecommunications Policy is to provide an instrument for translating the policy work on telecommunications that has been done over the last few years into Government policy. By asking the public as well as interested parties through the Green Paper for their views on telecommunications policy before producing a White Paper, the Government can be sure that all possible views have been canvassed.

The Telecommunications Green Paper is divided into ten broad policy issues. Each policy issue contains a number of paragraphs that place each issue into context. A broad range of questions is posed in relation to each issue - from the general to the specific. A glossary at the end of the Green Paper contains explanations of key terms, abbreviations and organisations used in the document.

The responses to the questions raised in the Green Paper will form the basis of the Government's policy on telecommunications. The Government's policy on telecommunications will be presented in the form of a Telecommunications White Paper. If the policy in the Telecommunications White Paper is broadly acceptable, legislation on telecommunications will be prepared for consideration by the National Assembly.

HOW TO RESPOND TO THE TELECOMMUNICATIONS GREEN PAPER

The Ministry of Posts, Telecommunications and Broadcasting invites written submissions from the public and interested parties on the questions contained in the Green Paper. In your written submission, please write the number of the question and your answer to it. You should feel free to answer whichever questions you want to. It is not necessary to answer every question if you do not want to.

The Green Paper on Telecommunications Policy has attempted to identify the most important issues, options and questions that need to be answered in order to formulate a broad telecommunications policy for South Africa. If you think that there are issues or questions that have been left out of the Green Paper, please feel free to formulate your own question and answer it.

The written submissions will be available to the public at the cost of photocopying them. If you want to include any information which you regard as confidential, please mark it as such and attach it separately to your submission.

THE CLOSING DATE FOR SUBMISSIONS IS 15 SEPTEMBER 1995

Submissions should be sent to:

TELECOMMUNICATIONS GREEN PAPER
The Ministry of Posts, Telecommunications and Broadcasting
Private Box 1706
SAXONWOLD
2132

FAX: (011) 339 5050

The following details should be provided:
o Name
o Postal Address
o Telephone and fax numbers

FACTS AND FIGURES

The size and value of the South African telecommunications sector is not easily quantifiable. This is partly due to the fact that information on business activity levels in the sector is often confidential and thus not easily obtainable. More importantly, however, a certain level of uncertainty derives from the fact that technological developments are tending to blur the dividing lines between businesses such as classic telecommunications, broadcasting and information services which were once distinct but are now rapidly converging.

The sector, however, is dominated by Telkom SA Limited, the state-owned company responsible for the provision of most telecommunications services. Thus, published statistics on Telkom can give an approximate idea of the size of the sector.

TELKOM SA LIMITED (End of 1993-94 operating year)

Finances:

Fixed Assets	R13,80	billion
Turnover	R 8,35	billion
Capex	R 2,2	billion

Network:

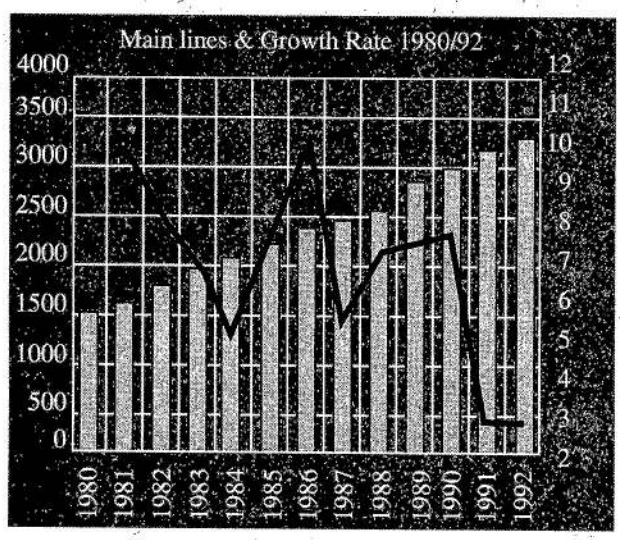
Main telephone services	3,66	million (60% digital)
Public telephones	50,000	
Telephone exchanges	2088	
Copper cable loop	18,5	million km
Employees	60 000	

In addition Telkom has a large interest in the INTELSAT global satellite system, valued at over R90 million, and in the submarine cable SAT-2.

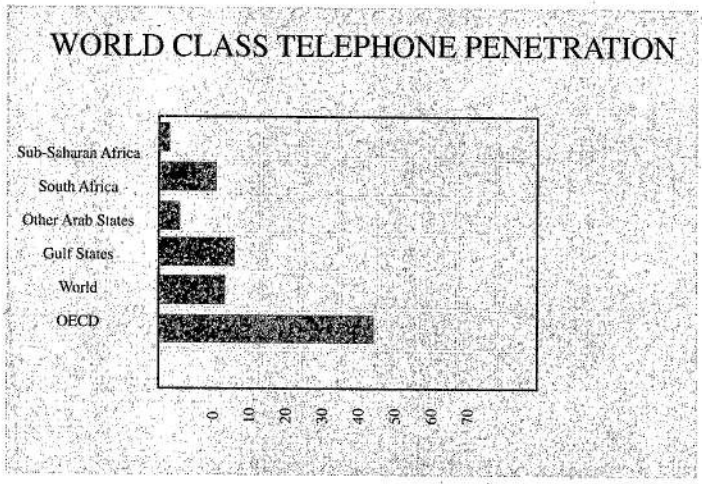
Other major network providers are the two cellular companies, Vodacom (in which Telkom has a 50% interest) and MTN. Their customer base is now over 300 000.

Very large users of telecommunications facilities are the broadcasters (SABC and M-Net), Transnet, and Eskom. They make large use of Telkom provided facilities, but also of self-provided capacity, and have personnel dedicated to handle their telecommunications needs.

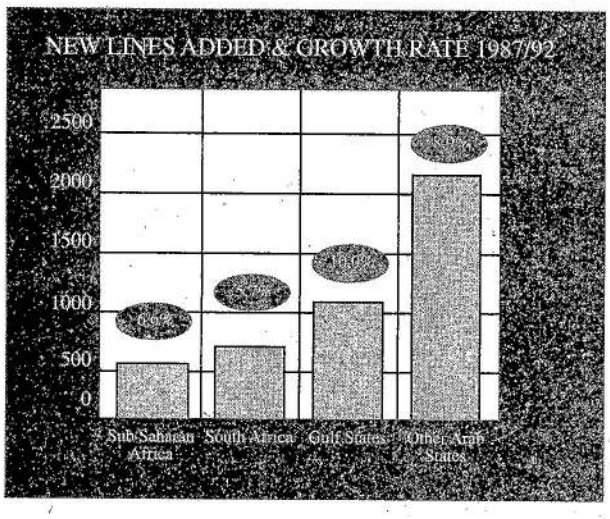
A very important part of the sector consists of the equipment manufacturers. Companies such as SIEMENS, ALTECH, PLESSEY, PHILIPS, TEMSA, etc., satisfy most of the needs of Telkom and of other users.



1. MAIN LINES AND GROWTH RATE 1980/92
South Africa's telecommunication network ranks at the top of the list for the continent. While growth rate has declined over the past few years, the objectives set by the Reconstruction and Development Programme are likely to escalate activity tremendously.



2. WORLD CLASS TELEPHONE PENETRATION
In terms of telephone penetration numbers, South Africa is in line with world standards. The RDP plans to raise the number of lines per person substantially.

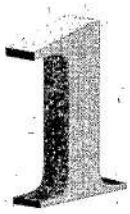


3. NEW LINES ADDED & GROWTH RATE 1987/92
South Africa's network growth in terms of lines added ranks highly in the region, yet has been declining in real terms.

TABLES FROM:

Department of Posts, Telecommunications and Broadcasting / National Telecommunications Forum: South Africa at Kyoto Systems Group, 1994

However, the country requires a much higher growth rate to redress past imbalances and address the needs of the future, if South Africa is to develop its potential in the global environment.



TELECOMMUNICATIONS AND DEVELOPMENT IN SOUTH AFRICA

In South Africa, there is an enormous gulf between developed and disadvantaged areas with regard to access to telecommunications facilities and services. This is part of the legacy of apartheid and must be redressed. Equity in access to telecommunications is also central to the relationship between telecommunications and development. The information revolution is sweeping across the world, and the global economy is increasingly an information-and knowledge-driven one. Telecommunications is the backbone of the global information economy and is becoming more and more important. It is not simply an aspect of development, but a precondition for its success.

The world has more than enough information, which means that possessing information is decreasing in importance, but ensuring ongoing access to information by means of efficient telecommunications is becoming vital to any person or organisation that wants to succeed.

Information and telecommunications systems enable some people to co-ordinate all of their activities with a number of other people, independently of where they are in the region, country or world. (These activities range from personal to business and political). People who cannot do this, because they do not have access to telecommunications facilities, are severely disadvantaged compared to those who do.

Social and business development is increasingly dependent on co-ordinating various resources, skills and opportunities, across a range of sectors and places. The current trend is towards a bigger and bigger difference between the information rich and the information poor. Specific telecommunications policies, designed to address this, form one of the ways in which this trend can be reversed, to assure a broader base for development and opportunitiy, particularly for historically disadvantaged communities.

GOALS

In carrying out its mandate, the South African government has a number of basic goals, principal among which are those encompassed by the Reconstruction and Development Programme (RDP)[1], viz:

- meeting basic needs
- developing human resources

[1] Section 2.8 (Telecommunications) of the RDP is appended to the Green Paper.

- building the economy
- democratising the state and society.

Telecommunications can play an important role in helping South Africa achieve these goals. In order to do so, the telecommunications sector must work towards meeting four interrelated objectives:

- the achievement of universal service
- the economic empowerment of historically disadvantaged South Africans
- the provision of a wide range of telecommunications services to stimulate and support economic growth in various sectors
- the effective use of telecommunications for social and infrastructural development.

The provision of universal service means putting a telecommunications line in every household wanting the service, at affordable prices. The achievement of universal service and the provision of a wide range of services are, in the long term, complementary objectives. However, the process of achieving each of these will require responses to identified needs at particular times both to achieve a balance between the two and also to redress the imbalances caused by apartheid. The process will require, in turn, innovative and clear policies, careful planning and hard decisions in order to chart a path towards a thriving, sustainable and equitable economy both within the telecommunications sector and nationally.

QUESTION 1.1: What is the best way to achieve universal service in South Africa?

The provision of universal access means placing a telephone within people's reach but not in every household, for example, by installing public or community telephones within walking distance of people's houses. The RDP plans to provide universal affordable access as soon as possible.

QUESTION 1.2: Is universal access an appropriate intermediate stage along the road to universal service?

CHANGES IN THE TELECOMMUNICATIONS SECTOR

Telecommunications is evolving very rapidly world-wide, given technological advances and a general restructuring of the sector both within countries and internationally. The evolutionary forces are often very powerful, and are supported by global economic and technological trends; they make continuous change within the sector virtually inevitable over the next decade. These forces act as drivers for change and affect both the nature of telecommunications and the alternatives available for structuring the telecommunications sector. There are both internal (national) and external (international) drivers of change (which are common to many countries).

Internal drivers of change

- the aspiration of government to provide access quickly to telephone and telecommunications services as widely as possible; to increase the supply of such services; to make these services more affordable
- the urgent need to redress historical imbalances in the availability and concentration of telecommunications services
- the desire to fully utilise the potential of telecommunications as a backbone for development within the country
- the telecommunications needs of businesses which are increasingly and rapidly becoming more sophisticated and global in nature
- requirements to improve the economics of the sector in order to support the growth of the infrastructure and available services
- the need to attract significant investment into the sector so that telecommunications can be used effectively for achieving development objectives
- inadequacies in the current legislative and regulatory framework.

External drivers of change

- technological developments which undermine the monopolistic supply of networks and services by lowering entry-cost barriers and providing a wide variety of technical alternatives
- the increasing convergence and globalisation of telecommunications and broadcasting technologies, and the integration of information services (the development of global "information highways")
- the internationalisation of network provision, particularly for international calls, which marginalises national network providers
- the development of international strategic partnerships in the sector
- the global liberalisation of trade in telecommunications products and services, and pressures by trading partners on international bodies (such as the World Trade Organization (WTO)) to follow suit
- an increase in the diversity of sources and models for financing.

Change in the sector is inevitable. The real choices relate to how best to manage the process of change. Market structures, financing and ownership, and regulation can be used to manage the process by, for example:

- imposing public service obligations such as community access to the network, at prescribed rates and scales in different geographic locations

- putting in place tariff differentials in different areas or for specified groups
- segmenting the services market and opening it selectively to different degrees of competition
- regulating network and services provision, interconnection, the quality of services, the allocation of the frequency spectrum, and so on
- facilitating the flow of investment funds from foreign and domestic, non-subscriber sources
- carrying out various public consultation processes.

POLICY FORMULATION

Policy in a highly dynamic field such as telecommunications should be understood as a flexible and evolving framework rather than as fixed. Policy formulation should take into consideration both short-term and long-term objectives and constantly evolving social, economic, political and technological conditions. Technological developments and changes in the global market will have to be monitored on an ongoing basis so that the telecommunications policy can be reviewed, and, when appropriate, changed to keep in line with these changes. A flexible policy regime should be instituted from the start. Policy should also specificy the public interest in telecommunications and how this can be advanced.

QUESTION 1.3: How can the effectiveness of the telecommunications policy in meeting its stated social, economic and political objectives be continuously evaluated?

- How can required adjustments be made?
- How can the public interest in telecommunications be advanced as a goal of policy formulation?

VISION

Telecommunications policy should be a clear expression of the state's vision for the telecommunications sector. Such a vision is needed because of:

- the complexity of the sector (both within South Africa and globally)
- the sector's growing importance not only as an economic sector in itself but also as a key element of the infrastructure supporting other economic sectors
- the increasing number of groups involved, and the structural and technological options available.
- The need to identify the public interest in telecommunications

The vision should identify an evolutionary path towards the overall goal, and should also clearly identify the various stages along that path.

QUESTION 1.4: What should South Africa's vision for its telecommunications sector be? For example:

- It should aim at providing a significant economic contribution to the national economy, both locally and through exports, for telecommunications related goods and services.
- It should view telecommunications as the backbone for development projects within the country.

QUESTION 1.5: How should the state facilitate this vision?

SOUTH AFRICA'S "INFORMATION HIGHWAY" AND DEVELOPMENT

South Africa's national telecommunications infrastructure forms the basis for its own "information highway" and its connection to the rapidly evolving Global Information Infrastructure (GII). While the term "information highway" is considered (especially in North America) mainly in the context of sophisticated multimedia-based services, it is, in fact, a continuum of communications facilities and services which can carry voice, text, data, images and video. Some of the more "sophisticated" (and often bandwidth-intensive) services may be very relevant for supporting basic social development objectives (for example, they may provide access to information for education, deliver rural health services, or facilitate the involvement of individuals or groups in democratic decision-making). The RDP has already identified connectivity for schools and health facilities as a priority.

QUESTION 1.6: Which sectors should receive priority for applications of national information infrastructure?

QUESTION 1.7: How should the costs of development-related sectoral applications be financed?

- Should the telecommunications component (both capital costs and operational costs) be subsidised?
- If so, by whom?
- Who should prepare the programming, software, databases, and so on?
- How should this be financed?

QUESTION 1.8: How can current RDP planning for connectivity for schools and health facilities anticipate the capacity requirements for applications which will be implemented in these sectors in the near future?

As global technological and economic development continues, countries are starting to examine the prospects and implications for an "information society" and a related information-based economy. Different countries' paths towards this kind of society and economy will be of varying lengths and will follow different routes, but for each of them, policies developed now will affect options in the future.

QUESTION 1.9: Given that policies developed now will affect future options, what kind of research should South Africa undertake to determine the implications of and options for its eventual participation in an evolving global information society?

LINKAGES TO INFORMATION POLICY

Telecommunications is the key enabling component of the information sector and the carrier for many of the services provided through information systems for both public and private sector uses. The effective flow of information, and effective communications channels, are crucial for effective economic and social development. Thus, telecommunications policy should also be seen in the context of a broader information policy for South Africa. A policy framework concerning information in South Africa should cover a wide variety of issues, such as freedom of access to information, privacy, intellectual property rights, cultural development, the development of viable local information and information technology industries, and the development of sectoral information systems to meet social objectives (such as health and education).

THE DEVELOPMENT CHALLENGE

The development of a telecommunications policy for South Africa is highly opportune given that the RDP is currently working towards achieving its major development goals. Telecommunications can play an important role in furthering social and economic development in a participatory and democratic fashion.

QUESTION 1.10: How will the telecommunications policy being developed here contribute to a future information policy framework?

- How will instruments developed under the telecommunications policy be linked explicitly to future policies developed in the information policy framework?

2 MARKET STRUCTURES IN THE TELECOMMUNICATIONS SECTOR

Market structures are fundamental to shaping a sector so that specific social and economic objectives can be pursued and realised. The telecommunications sector in South Africa has been characterised by the monopoly provision of services, the monopoly provider being the Department of Posts and Telecommunications (SAPT), and more recently the state-owned Telkom SA Limited (Telkom).

Telephone penetration in South Africa has been skewed by apartheid, and it is open to question whether SAPT or Telkom, or the post and telecommunications departments set up under the then TBVC (Transkei, Bophuthatswana, Venda, Ciskei) states, pursued universal service. The average telephone penetration in South Africa in 1994 was 9.8 lines per 100 people. However, the penetration rate was as high as 25 in white urban areas and as low as 0.1 in rural TBVC areas. The rapid increase of telephone penetration rates, particularly in black urban and rural communities, should be a primary objective of any telecommunications policy which intends to fulfil the RDP's telecommunications goals. A structural reform of the telecommunications sector may be required.

Any reform must recognise the constraints imposed by the dualism in South African society and its economy, that is, pockets of first world development within an otherwise developing country. Changes will also have to take into account global trends in the telecommunications industry, driven by advances in technology and changing customer needs.

The market structure should meet the basic objectives set out in Issue 1 in terms of both supply and demand. On the supply side, several market structure options are commonly recognised:

- a state-owned (fully or majority) monopoly enterprise for some or all of the telecommunications networks and services
- multiple private corporations (including the privatised former monopoly provider) competing with one another, but all interconnected seamlessly
- a mix of a state-owned monopoly for certain networks and services (usually the public switched telephone network) and competition among private companies in other services
- private sector companies co-opted into Telkom in a "Build, Operate, and Transfer" (BOT) operation, including one specifically for rural and underdeveloped areas.

On the demand side, there are several market segments, including, but not limited to:

- those who have never been given access to even the minimum of telecommunications services, especially in the rural areas
- the residential sector, requiring a basic telephone service, but which could soon require basic data and fax services. Within this sector, there is currently severe inequity in provision between geographical areas and between racial groups
- the emerging informal business sector
- business, which requires a wide array of basic and value-added telecommunications services in voice and data. There is a sub-segment of business that requires global international connectivity and services.

The long-term goal of universal service is a telecommunications line in every household at affordable prices. However, considering existing resources and the fact that many people live in unstructured, informal and transient settlements, it may be necessary and advisable to consider universal access as an interim step towards achieving universal service.

QUESTION 2.1: Should universal access be an interim objective in restructuring the sector towards universal service?

- How should universal access objectives be defined?
- What should be the grade of services?
- What should be the rate of service provision?
- Should universal access be provided at special tariffs?

QUESTION 2.2 : What indicators should be used to define universal access (distance, time, opportunity in emergency, etc.)
For example:

- what should be the maximum distance that a rural citizen may have to travel to get access to a basic telephone?

QUESTION 2.3: How should the provision of rural telecommunications be addressed, both in the long and short term?

The telecommunications sector is currently structured around Telkom, the basic monopoly provider. A monopoly provider has many advantages. It can realise economies of scale and scope, establish standards, offer integrated end-to-end services, and cross-subsidise expansion of the network to unremunerative areas and customers. However, the basic conditions supporting monopoly provision in telecommunications have changed.

New technologies have lowered the previously high entry barriers in many service areas and have thus undermined the ability of a telecommunications monopoly to maintain itself. The same technologies have enabled certain users to bypass the service offerings of the monopoly provider.
International competition in particular service areas has meant that tariffs must be determined closer to actual market rates, which means that the classic cross-subsidy mechanisms are no longer appropriate.

Thus, new technologies, new services and to some degree the need to improve the suboptimal performances by the monopolies have meant that, in many countries, competition is increasingly perceived as a viable mechanism for realising technical innovation, reducing costs, increasing affordability and providing a greater variety of services. Global trends have been in favour of opening to competition most areas of service, except basic switched telephone services. It is also the case that new low-cost technologies may allow for massive infrastructural development in a more competitive environment. Hence some countries have even started to open up basic telephony to competition. The provisions of the recent GATT agreement (to which South Africa is a signatory) may require liberalisation of some telecommunications services.

QUESTION 2.4: Can the telecommunications sector as it is currently structured achieve the fundamental goals articulated in Issue 1?

On the basis of the experience of many countries over the past decade, competition is generally offered as the remedy for the inefficiencies of a monopoly. These inefficiencies are perceived to be the failure to innovate; unresponsiveness to customers' needs; and tariff structures that do not reflect underlying costs. Competition in the telecommunications sector can bring costs down and hence prices to customers, and thus increase affordability. It can also lead to innovations in technology, services and pricing packages that will facilitate the rapid expansion of a network and improvements to the quality of services. New operators can bring additional investment into the sector. The benefits that competition may bring are, however, not without risk. These include the elimination of incentives to fulfil public service obligations; the targeting of highly profitable services to business to the detriment of the public switched telephone network (which represents a considerable investment); the marginalisation of domestic industry and service providers by international competitors; the loss of jobs; and the duplication of infrastructures. In the final analysis, competition is not an end in itself, but a means to an end, that is a tool that can be used to achieve certain objectives. Thus, determining the optimal market structure for the telecommunications sector, that is, striking the proper balance between competition (where and how it should be used) and monopoly (where it is still preferable), is of crucial importance.

QUESTION 2.5: Which is the best structure to ensure that the fundamental goals articulated in Issue 1 are promoted?

For example:

- a single supplier (such as a state-controlled monopoly or a private monopoly)
- a few suppliers (duopoly or oligopoly)
- regulated and/or unregulated competition in some areas while other areas remain a monopoly
- full competition
- a phased approach from one structure to another.

The South African telecommunications sector is currently controlled by Telkom (monopoly control of the fixed network for telephony), and the two providers of wireless cellular telephony. The cellular market started as a supplement to the fixed network, servicing new customers. However, as it grows in size, the cellular market has begun competing with the fixed network. It may also compete in long-distance traffic, depending on the tariff structures of the networks. Other market segments, such as CPE, are partially open to competition and others, such as Value Added Network Services (VANS) are carried out under inadequate legislation, which makes for an unsatisfactory competitive environment due to the many unresolved questions that exist regarding license and service conditions.

The fundamental carrier and switching systems in telecommunications is becoming digital. Even voice is now becoming digitised for transmission. This is rapidly erasing the distinction between voice and data services. The traditional distinction between these services is thus becoming unenforceable, with huge implications for market structures, and Telkom's revenues. In other words, monopoly conditions are already disappearing and the sector is characterised by various sets of conflicting, often irrational rules, contracts and side agreements. The de facto liberalisation of some sectors of the market over recent years needs to be recognised in legislation. Rationalising the sector would begin to secure the fundamental goals of universal service and economic growth. Such rationalisation requires determining the balance between monopoly and the degree of competition in the three areas of the sector: networks, services and equipment.

QUESTION 2.6: If competition is introduced, which of the following should be opened to competition, when, and to what degree?

- *public networks:*
  local
  national
  international
  fixed wire network
  radio (wireless) network (mobile and/or fixed)
- *private networks:*
  national
  international
- *services provided over the networks:*
  national and/or international services, including
  telephony

data
leased lines' capacity resale, with or without value added
- value added network services (VANS):
CPE (telephone, fax, PABX, etc.)

Competition is a tool that needs careful application in a complex market such as South Africa's. For instance, significant imbalances in tariffs offer large margins in long-distance and international traffic which could encourage entry into the market in ways detrimental to the incumbent operator. Competition may not ensure universal service unless obligations to this end are imposed by the state on the various providers.

QUESTION 2.7: Assuming that there will be several competitors in the telecommunications sector, how should each contribute to universal service?

- Should each have clear-cut universal service obligations (directly, in terms of service provision, or indirectly, in terms of some form of financial contribution) as a condition for obtaining a license?
- Should indirect (financial) contributions be paid into a "universal service fund" which would be used to finance universal service provision directly?
- Who should be responsible for managing such a fund?
- Who should decide on universal service obligations?

QUESTION 2.8: Assuming they can all be regulated, what should be the conditions of entry for international network and service suppliers?

Should there be any limits set on foreign ownership?
If foreign investment is sought, how can investor's confidence be best ensured?

QUESTION 2.9: If Telkom retains some form of monopoly, what should be the role of other potential network providers (such as Eskom, Transtel, Sentech, Orbicom, etc.)?

- Should they be allowed to provide services in areas where Telkom has no infrastructure?
- Should they be allowed to provide services in areas where Telkom has infrastructure? If so, should this be only for their own use or also for use by third parties?
- Alternatively, should these networks be taken over by Telkom?

In the final analysis, a balance must be found between the industry-specific characteristics and constraints, and the general competition policy objectives, including the objective of fair competition between the incumbent operator and new entrants into the market. Specifying the conditions of competition in the various market segments is a necessary but difficult task, particularly if there is to be a mixture of monopoly and competitive provision of services, and entails dealing with several more technical questions.

QUESTION 2.10: If there is a mixture of monopoly and competition, should the monopolist be permitted to enter into competitive service markets and under what conditions?

- If so, should there be a separation between the provision of services under monopoly conditions from the provision of services by the same entity in competitive markets?
- Should this separation be in terms of accounting and reporting, or by means of accounting alone, or by means of fully separate subsidiaries?

When a monopolist supplies infrastructure to other service providers, that in turn supply services by means of that infrastructure in competition with each other, the question of how to ensure that the monopolist does not discriminate between these parties arises. A solution is to allow the other service providers to provide their own infrastructure/s. However, one of the reasons for maintaining a monopoly is its provision of infrastructure, because this facilitates economies of scale and provides the monopolist with a source of cross-subsidisation funds. Allowing service providers to set up their own infrastructure/s has certain potentially negative consequences. Firstly, while it may create advantages for the individual service provider, it may also result in the duplication of infrastructure. Secondly, it may encourage service providers to bypass the monopolist infrastructure if they are capable of reselling their surplus facilities to third parties, thus undermining the revenue base of the monopolist.

QUESTION 2.11: If there is a monopoly provision of infrastructure and some form of competition in other services, must the suppliers of the competitive services use Telkom's infrastructure, or can they supply their own?

Most of the distribution network, from the switching exchanges right through to the telephone customers (known as the "local loop"), is provided by means of copper cabling. This is costly to install and often represents a major portion of the operator's investment in the network. This "fixed wire" technology is difficult to plan and not easily able to be adapted should circumstances change. In the past, it was the only practical way of providing the local loop. However, radio technology is now becoming available, which provides a fast, flexible and, in certain circumstances, cheaper alternative to the fixed-wire local loop. "Radio-in-the-loop" can thus be used as an extension of the fixed-wire distribution network, or to complement it, or in competition with it.

QUESTION 2.12: If there is a monopoly provision of the local loop, should the use of radio technology in the local loop be considered to be part of the monopoly, or just one of the alternatives to the local loop?

Private networks are self-contained telecommunications infrastructures set up for the exclusive use of a particular organisation. The underlying transmission capacity is normally leased from the monopolist or other licensed providers of infrastructure, and in some cases (such as Transnet) is provided by the organisation itself. Various restrictions normally apply to the use of private networks: for example, the networks may be used only for the internal communications needs of the organisation, or they may be used for only one type of traffic (such as data traffic). The restrictions aim to prevent the private network from being used to handle traffic outside of the organisation (third-party traffic), as this would infringe on the rights of the monopolist or other licensed operators. Third-party traffic in a private network could be allowed in two ways: by allowing the private network operator to "resell" any spare capacity to third-parties, or by interconnecting the private network with the public network/s, and thus making it available to the public or to selected segments of the public. In the current regulatory environment third-party traffic may be carried only by Value Added Network Services (VANS) that have entered into an appropriate agreement with Telkom.

QUESTION 2.13: Should private networks be permitted to connect into the public network?

- If so, under what conditions?

QUESTION 2.14: If private networks and the resale of leased capacity are permitted, should there be mechanisms to protect the revenues of a monopolistic network provider?

Broadcast and telecommunications technologies are converging, and consequently the distinction between the services they support is blurring. In many countries, companies involved in the television and telecommunications spheres of business are moving into each other's service markets. For example, cable TV networks are widely used in the United Kingdom to provide telephony services (at marginal costs to the network owners) in competition with British Telecom.

QUESTION 2.15: Should this be allowed in South Africa?

- If so, under what conditions?

3 OWNERSHIP, INVESTMENT AND FINANCING

Ownership structure, that is, who invests in and owns the means by which telecommunications services are provided, is an issue of fundamental importance. Ownership can affect the ability of providers to obtain the capital necessary to provide universal service and other important telecommunications services, and the willingness of providers to make necessary investments. A fundamental issue is which ownership structure will best redress the historical imbalances in the South African telecommunications sector.

As South Africa's state-owned and state-operated parastatal in the telecommunications sector, SAPT secured its investment capital by a combination of tariffs, Post Office savings bank investments and loans subject to approval by the Treasury. However, SAPT's successor, Telkom, has more limited funding options. Telkom can borrow on the capital market at commercial rates, but its ability is limited by the heavy debt it has inherited from SAPT. The other major source of investment funds for Telkom is its profits. Imbalances in the tariff structure, with relatively high tariffs for long-distance and international services, allows profits to be made which are invested to provide telephones and local calls at relatively low tariffs (cross-subsidisation). However, cost recovery from tariffs is constrained by the issue of affordability, both by individuals (in terms of their incomes) and businesses (in terms of their competitiveness in international markets). Furthermore, tariff imbalances create opportunities for Telkom's competitors to attack the more profitable (because they are relatively over-priced) market segments. Technological advances are making protective regulations more and more ineffective to control this "illegal" competition.

If the ultimate goal is to provide universal service, the traditional funding approaches are no longer viable given the great needs of infrastructure expansion to correct the imbalances of apartheid and to meet the specific targets of the RDP.

QUESTION 3.1 Should new sources of investment funds be explored, as well as the new ownership structures for the state-owned telecommunication service providers?

The questions of investment, financing and ownership are inevitably bound up with market structures. The global trend is away from direct government ownership of telecommunications companies, and away from monopoly toward competition. But even when the network and service are provided by private companies, government should play a promotional and developmental role to facilitate and ensure the flow of investment funds to the sector. Irrespective of ownership, government has a fundamental public service obligation to extend the network and services to all areas and all communities - not necessarily at cost-determined, but possibly at affordable rates (subsidy may be required) - and to ensure the quality of the service. Accomplishing such an objective involves a range of choices and trade-offs, the most critical of which are outlined below.

State-owned monopoly

Advantages: The absence of competition permits the easy standardisation of the network, the interconnection of its parts, and the integrity of the system. A state-owned monopoly may entail a better utilisation of resources (by avoiding duplication) in countries characterised by relatively scarce resources and a lack of capital. The attainment of the social goal of establishing universal service can be addressed directly, usually through the use of cross-subsidies. Access to capital may be guaranteed via direct government investment and state-guaranteed loans, but this can be problematical in periods when government is overborrowed.

Disadvantages: The lack of distance between government and the parastatal can mean that management is not allowed the autonomy necessary to operate the enterprise on an efficient or rational basis. In practice, it is difficult to judge and guarantee the performance of the parastatal. In the attempt to satisfy many (potentially conflicting) goals, government may use the parastatal as a "cash-cow", or to spur development in a particular part of the country, or to provide employment. While any of these goals may be worthy of praise in and of themselves, their pursuit through the parastatal tends to push the enterprise away from strictly economically efficient operation. Funds come from the state; thus in times of budgetary difficulty, the parastatal may be prevented from making needed long-term investments. The lack of managerial autonomy may establish a set of incentives that does not foster optimal decision-making, because, finally, customers have very little choice if they are dissatisfied with a service or require more specialised services. Customers thus tend to take matters into their own hands, resulting in illegal and uncontrolled practices.

"Commercialised" parastatal monopoly under regulation

Advantages: Managerial autonomy is allowed to a large extent, and this can provide suitable incentives to the parastatal management. Monopoly provision retains the benefits of standardisation and system integrity. Performance criteria in principle can be established and the regulatory body can check parastatal performance. Because the state is the sole "shareholder", the parastatal does not have to orient the enterprise towards the type of short-term profitability often demanded by general investors, and it can still focus on investing for network modernisation and growth to achieve the primary goal of universal service.

Disadvantages: Because the parastatal no longer has the ultimate backing of the government, it must approach capital markets on its own. This means higher borrowing costs and generally translates into higher prices for services, which could impede the universal service goal. However, the cost of borrowing will depend on the effectiveness of the enterprise and this may encourage management to improve its performance. The public, and especially the large users, will put pressure on the regulatory body to ensure that services are priced according to costs. Nevertheless, as in the previous model, the customer is still largely captive to the monopoly.

Private, profit-oriented monopoly under regulation

The enterprise in this case is profit-oriented, and market signals will tend to powerfully guide its performance. However, its monopolistic power may lead to abuse in terms of high prices and discriminatory service provision. The company will need to be subject to an external regulator, which will usually set service provision standards, and control prices. Tariff controls have generally been applied in one of two forms:

- rate-of-return, which is aimed at limiting profits, rather than individual prices, to a percentage of the capital invested
- price caps, which are aimed at directly controlling prices by limiting increases in relation to some index, such as inflation (usually measured by the consumer price index).

Advantages: This form of ownership potentially provides the same benefits as the state monopoly, if strict regulatory controls effectively ensure the non-discriminatory provision of services at predetermined standards and fair prices. If the private monopoly is the result of the state's having sold a previously state-owned monopoly to private investors, there are additional benefits and drawbacks (see the privatised and liberalised model discussed below). The different tariff controls will have different effects: rate-of-return based tariffs favour long-term capital investment, and hence network expansion, while price caps favour short-term cost-minimising strategies, and lower prices.

Disadvantages: Profit-orientation will tend to draw the company away from the primary social goal of providing universal service and towards the provision of those services that can bring in premium rents, such as business services. The interests of the shareholders take precedence, and there is evidence in some countries that this can focus the company on short-term profitability rather than on long-term growth. In those areas where the company might face competition (these tend to be value-added services, primarily used by business) the company will fight hard to retain its market share, including practising predatory pricing or even secretly reversing the historical cross-subsidies from long-distance to local calls and rentals. Rate-of-return regulation may lead to excessive capitalisation, and hence unnecessarily high prices. Price caps, with their emphasis on cost reduction, may lead to poor services and hamper network expansion.These dangers underscore the necessity for a strong, independent regulatory authority. But regulation is no panacea; it is a difficult task. The regulatory body is largely dependent on the information provided by the company, and to make accurate assessments requires extremely skilled staff. Pricing and investment calculations are extraordinarily complex. And the regulatory process is generally slow. Particularly in periods of high inflation the slowness of the regulatory process will have detrimental effects on the company.

Privatisation and liberalisation

This situation prevails when the state monopoly is sold to private investors and at the same time several other operators are allowed to provide networks and services.

Advantages: Competition greatly increases the power of the market to dictate incentives and decision-making. Presumably, competition will induce management to operate in the most cost-minimising manner and productivity will increase. Competition will create layers of price-quality options. Prices normally go down and service quality goes up. Regulations are still required to ensure fair competition and the achievement of government objectives, but these can be more relaxed and less directive than those for regulating a monopoly.

There may be a one-time-only large benefit to the Treasury due to the sale of a parastatal to private investors. In the case of South Africa, the privatisation of Telkom could contribute funds to the RDP for housing, water or health care projects, or, if the capital is used in the telecommunications sector itself, to the RDP's telecommunications goals. In short, selling equity brings in capital. International partners may bring infusions of investment capital, technology, new skills and management practices into the telecommunications sector. The newly privatised enterprise may look very positive to lending institutions, thus further improving access to loans for investment. An infusion of capital put to good use in plant and equipment can improve productivity and reduce losses, and increase efficiency and the ability to expand services generally. And the more profitable the privatised company, the more taxes the Treasury can collect. The added dimension of competition (which usually means less direct regulation and more flexibility to the new owners) normally increases the sale price and the benefit to the Treasury.

Disadvantages: With regard to the sale, the benefits to the Treasury may be illusory. The sale is only a gain to the Treasury if the net price is greater than the net present value of the revenue that would have been earned by the assets. And the market value will largely depend on the degree of regulation that will take place subsequent to the sale. Regulation lowers the value of the assets because it attenuates the right of the new owner(s) to use their assets as they see fit. If the objective of privatisation were to permit wider shareholding, international experience shows that usually within a year the smaller investors sell to institutional investors. Privatisation may also have negative effects on the labour force, both in terms of employment levels, which may decrease, and in terms of conditions of employment, which may become less favourable than the state-owned enterprise may have been willing to offer. Both these aspects might have cost implications for the state (for example, unemployment benefits, retraining costs) that should be taken into consideration.

QUESTION 3.2: What mechanisms should be put in place in order to avoid job losses?

There are very real limits to competition in infrastructure industries. The number of competitors in any given service market may be low, and in some service markets, especially the basic household market, natural monopoly conditions may prevail for some time. This means that most people will be captive to a monopolist, or to a

few oligopolists that could form a cartel. There are therefore powerful incentives to neglect the captive market or to exploit it to cross-subsidise the company's offerings in the potentially more lucrative competitive market. One solution is the establishment of fully separate subsidiaries to operate independently in different market segments, but there is a limit to the effectiveness of this. Because economies of scale operate in some areas, oligopolistic behaviour may dictate strategies which deny entry to other operators by various means. Management will usually move towards short-term profits rather than long-term investment, and research and development (R&D) will be cut back. In infrastructure industries characterised by the need for long-term planning this can be detrimental. The reality is that this is a regime of regulated competition, requiring skilled regulators and characterised by new sets of distortions and transaction costs. There may be real benefits to the arrangement, but it is naive to believe that there will be no regulation.

QUESTION 3.3: What should be the state's policy with regard to state-owned telecommunications assets?

QUESTION 3.4: What should be the status of existing parastatal operators, particularly Telkom?

For example:

- Should Telkom, Transtel and Sentech remain parastatals owned by the state and under some degree of direct state control?
- Should parastatals have goals other than commercial or service ones?
- Should Telkom continue in its "commercialised" form, owned by the state but operationally independent of it?
- Should the parastatals in the telecommunications sector, including Telkom, be privatised, and, if so, to what extent (that is, the state could retain majority shareholding or could fully divest its ownership stake)?
- If part or all of the various telecommunications parastatals are privatised, should the equity be retained for investments in the sector (including the retirement of Telkom's debt), or should they wholly or partly accrue to the Treasury for use in the achievement of other goals?
- Recognising that Telkom is the largest player, how can Telkom meet its efficiency, competitiveness, and public service goals while contributing to job preservation/creation obligations?
- Should the state break Telkom up into a number of companies?

QUESTION 3.5: How can Telkom's inherited debt be dealt with so that its financial viability is improved?

QUESTION 3.6: Regardless of the state's ownership of the parastatals, what should be the relationship between the parastatals and the state?

- Should parastatals compete against each other as the primary means of realising sectoral efficiencies, or should the state enact mechanisms to compel the parastatals to complement each other in order to reduce redundant investments?

QUESTION 3.7: What are the best means, mechanisms and instruments to increase the level of investment available for network and service expansion? (This, of course, will depend in part on the market structure of the sector, the subject of Section 2.)

For example:

- direct government investment (recognising that this could be constrained by contending requirements for housing, water supply, education, health care, etc.)
- loan guarantees from international investment institutions (IBRD, IFC and others)
- a telecommunications finance corporation that could float appropriate financial instruments (such as bonds)
- a savings bank with preferential lending to telecommunication companies
- selling equity in parastatals (that is full or partial privatisation of any or all telecommunication parastatals) and using it for network building, expansion and debt retirement
- bonds
- community financing of local facilities
- direct foreign investment, under specific conditions to ensure compatibility with national objectives, for example "Build, Operate, Transfer"(BOT) arrangements.

QUESTION 3.8: If equity in the parastatals is offered, should special shares be reserved for the unions of the sector and for disadvantaged communities, and at non-market prices?

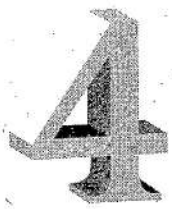
QUESTION 3.9: Should there be a code of conduct for all investors in the sector, including limits to foreign equity in different market segments, obligations in areas of employment of South Africans (particularly from disadvantaged communities), training and so on?

QUESTION 3.10: Should public investments be made in a rural telecommunications corporation?

QUESTION 3.11: How should R&D in the telecommunications sector be funded? Should a sector-wide telecommunications R&D fund be established? Where should such research be located?

It is the government's intention to establish an overall industrial policy and, in particular, a long-term investment policy for private and public infrastructure. This could have significant implications for the telecommunications sector. If for instance it were government policy to encourage industrial decentralisation, there would be a need to co-ordinate the development of infrastructure, and most particularily of the telecommunications infrastructure, with such a policy.

QUESTION 3.12: How can investment policy in the telecommunications sector be linked with the government's overall industrial policy?



ECONOMIC EMPOWERMENT OF HISTORICALLY DISADVANTAGED SOUTH AFRICANS

One of the major challenges facing the government of South Africa is to achieve a balance between maintaining stable economic growth and redressing the inequalities of the past. The future economic health of the country depends crucially on the speed and efficiency with which the economic empowerment of the majority can be effected through business development. The telecommunications industry can play an enabling role by providing employment and entrepreneurial opportunities for South Africans from historically disadvantaged communities and by supporting training programmes.

Historically disadvantaged South Africans have been denied access to education and job-related skills. They have also been denied opportunities for ownership and have been disadvantaged by discriminatory employment practices. Any programme for economic empowerment, should thus aim to provide opportunities and access to knowledge and skills on the one hand, and to ownership and entrepreneurship on the other.

One way to redress the situation would be to make productive use of the entire economically active population to stimulate growth in the economy. To this end, concerted efforts should be made to empower historically disadvantaged South Africans to take up leadership positions in the telecommunications industry. The potential for creative contributions from the black majority should be nurtured so that telecommunications is able to fulfil its role as an important stimulus to the economy.

The economic empowerment of members of historically disadvantaged communities is generally defined as a process that deliberately creates entrepreneurial and managerial opportunities for previously disadvantaged groups to enable them to participate in broadening the ownership and management base of the economy.

The process of empowerment in the telecommunications sector could have two components to start with:

- an employment policy to ensure that historically disadvantaged personnel move into technical and managerial positions (This needs to be discussed in conjunction with human resource development and training and is dealt with under Issue 8.)

- a policy to facilitate economic empowerment for historically disadvantaged South Africans in the industry both at the level of participation and ownership in existing enterprises and, most importantly, through the facilitation of enterprises owned by historically disadvantaged South Africans across the industry. (This part of the Green Paper deals with that second component.)

A range of support programmes could be considered, with priority given to: emerging businesses; the promotion of ownership and control in the formal economy; rural development and infrastructure; and the development of management skills and competence.

Economic empowerment in business entrepreneurship and ownership can be facilitated in many ways, such as through set-asides, in which specific percentages or categories of contracts for the procurement of equipment and supplies are earmarked for black businesses. While strategies like this may offer opportunities to those who would otherwise not have had access to business, there are disadvantages, including the risk that businesses developed in this way may not be able to survive in a competitive environment once the set-asides are discontinued.

QUESTION 4.1: How can existing telecommunications companies facilitate shareholding and the participation of historically disadvantaged South Africans in the executive structures of their companies?

QUESTION 4.2: What kind of support do the large economic empowerment consortiums need with regard to the telecommunications sector?

QUESTION 4.3: How can the industry facilitate the entry of medium and small enterprises into telecommunications?

QUESTION 4.4: Is the promotion of joint ventures and franchising a suitable way to provide capital, expertise and training in the initial stages of this process?

QUESTION 4.5: What financing mechanisms can be put in place to support and empower entrepreneurs from historically disadvantaged communities in telecommunications?

QUESTION 4.6: How can the government facilitate the economic empowerment of members of historically disadvantaged communities in the telecommunications industry? What incentives can be provided in this regard?

QUESTION 4.7: What mechanisms can government set in place to monitor the telecommunications sector on the economic empowerment of historically disadvantaged communities?

QUESTION 4.8: How can communications service providers facilitate franchising policies and business development in rural areas and informal settlements to extend the public network through community agencies and phone shops?

QUESTION 4.9: How can telecommunications development in rural areas and informal settlements be provided in a way that promotes joint business / community development, and thus overcomes the traditional adversarial relationship between business development and community development? Should this be provided by the state, the telecommunications providers, a development agency, or a combination of these?

Women have also been disadvantaged during the apartheid era. They have also been denied access to ownership, entrepreneurial and managerial opportunities in the telecommuncations industry.

QUESTION 4.10: Should there be a specific programme of women's economic empowerment in the telecommunications industry?

5

REGULATION OF THE TELECOMMUNICATIONS SECTOR AND THE RADIO FREQUENCY SPECTRUM

MARKET STRUCTURES AND REGULATION

Market structures and ownership forms have a fundamental effect on the manner in which the sector may need to be regulated. In most countries where the telecommunications sector has been restructured, this has usually been done by the government in order to achieve some policy objectives, and almost invariably there has been a significant modification of regulatory structures and processes, aimed at giving effect to the telecommunications legislation and its objectives. The only circumstances in which no distinct regulatory structure has been established are in the case of a state monopoly (usually a state department), in which case the functions of operator and regulator coincide, and in the case of full competition across the board, in which case market forces are deemed to determine demand, supply and prices, and "regulatory" functions are the responsibility of institutions such as the competition boards and the courts. In all other cases regulatory structures have been set up, usually by means of specific telecommunications legislation. Before the regulatory environment can be developed, however, three basic questions have to be answered:

Why should the sector be regulated, i.e. what are the objectives of regulation,

What should be regulated, i.e. what is the scope of regulation, and

How should it be regulated, i.e. what structures and processes are required.

PRESENT SITUATION IN SOUTH AFRICA

Legal situation

At present, the provision of telecommunications services and the various legal inter-relationships between the main players are legislated as follows:

- Telkom has a statutory monopoly in terms of the Post Office Act to provide telecommunications services to the public. Telkom is a public utility wholly owned by the state. The Minister of Posts, Telecommunications and Broadcasting represents the state as shareholder in Telkom. Telkom's tariffs are subject to approval by the Minister.

- The Minister of Posts, Telecommunications and Broadcasting may, if it is in the public interest and after consultation with Telkom, permit another person to provide a telecommunications service.
- The Postmaster General (PMG) is obliged to license telecommunications service providers other than Telkom if so instructed by the Minister. The PMG is also responsible for type approval of radio equipment and telecommunications equipment provided by the private sector for connection to Telkom's network. The PMG, however, has no regulatory authority over Telkom and cannot set or enforce interconnect requirements, or protect Telkom's customers against unfair pricing, insufficient or inadequate quality service.
- The PMG is authorised to manage the Radio Frequency Spectrum (RFS) in terms of the Radio Act.
- The PMG is the Party and Telkom is the Signatory to the INTELSAT and INMARSAT agreements.

Suppliers

The main suppliers of telecommunications services and equipment in South Africa are:

- Telkom, which installs maintains and operates voice and non-voice telecommunications networks. Telkom also controls and manages telecommunications numbering schemes for voice and non-voice services;
- two licenced cellular operators, Vodacom Pty Ltd and Mobile Telephone Networks Pty Ltd (MTN), both operating GSM technology-based networks. Vodacom also operates the ex-Telkom C450 "motorphone" cellular telephone system (the cellular operators make use of several service providers);
- two licenced radio trunking operators, Fleetcall and Q-Trunk, several radio paging operators, and several suppliers of Custom Premises Equipment (CPE);
- Transtel, a business division of Transnet, and Eskom, the electricity supply utility, provide extensive "in-house" telecommunication services to support their core activities
- Sentech, an affiliate of the South African Broadcasting Corporation (SABC), and Orbicom, an affiliate of M-Net, provide broadcast signal distribution services by means of a range of technologies, including leased Telkom lines, microwave links they supply themselves, or leased satellite links.[2]
- Several suppliers of Value Added Network Services, operating under licences issued by Telkom.

Users/consumers

There is a range of groups of users such as individuals, businesses and various levels of government, including parastatals. Users can also be classified according to the type of service used, for example telephony (voice) or telematic (non-voice) services.

2 Interconnection between Telkom's networks and other networks is done either on Telkom's terms or in accordance with a negotiated interconnection agreement.

In the following questions, a number of aspects should be taken into account: the complexity of the existing telecommunications sector, the situation that Telkom and the PMG are "de facto" co-regulators; the drivers for change; and the objectives for the sector and its structure.

QUESTION 5.1: Should the sector be regulated?

QUESTION 5.2: What form of regulation does the sector require?

QUESTION 5.3: Is the current situation satisfactory or should it be changed?

OBJECTIVES OF REGULATION

In the following it is assumed that a specific regulatory structure for the telecommunications sector will be established.

The objectives set by the political authority are normally translated into more or less explicit objectives for the regulatory organs. In general the regulator's mission could contain some of the following objectives:

- *Progress towards achieving universal service.* The questions of the rate at which universal service must be achieved, who should be responsible for it, and how it should be financed, have to be answered at the policy level. However, it may be required that regulations are developed to ensure that government objectives are achieved.
- *Control of supply conditions.* Almost always regulations are used to control the supply conditions.

Where a monopoly is entrusted with the provision of all or some of the services, one of the main objectives of regulators is usually the protection of the public against exploitation from the monopolist. This is usually expressed in terms of some form of price control and performance objectives.
Where competition is allowed, the main task of regulators is usually to ensure that a "level playing field" is developed and maintained in the competitive areas. To this effect licences are issued stipulating the conditions under which the various services can be provided. Sometimes licencing is fully within the powers of the regulator, sometimes licences are issued under ministerial authority. Furthermore, rules are developed to ensure the interoperability of networks and services, both from a technical and a commercial perspective. Thus the regulatory authority is given more or less direct control on interconnection agreements, the national numbering scheme, and the like.

- *Broad social objectives.* Telecommunications has a role to play in furthering the achievement of broad social objectives, both nationally and internationally, such as ensuring that the special needs of disabled people are adequately catered for in the design of equipment and services, assisting in case of disaster, protection of the environment, protection of life. The regulatory environment may assist in the achievement of these objectives.

- *Technical and economic objectives.* Many other objectives given to regulators often are more "technical" in nature, but still derive from some overall government policy objectives. Those most commonly found are:
  - ensuring technical preconditions for effective operation of the national network. This becomes more important as competition increases.
  - stimulating investment in the telecommunications sector by creating a stable and transparent environment in which investor's risks are better defined and controlled. This often means special efforts for accelerated investment in the national network, particularly in developing countries,
  - development and protection of the domestic telecommunications industry through regulations that prevent or restrict the entry of foreign companies, optimisation of the use of shared resources, most typically the electromagnetic spectrum,

QUESTION 5.4: Who should be responsible for policy making and for regulation?
- Should the policy-making function be integrated with or separate from the regulator?

QUESTION 5.5: What should the main functions of the regulatory authority be?

QUESTION 5.6: Who should be responsible for consumer protection?
- Regulator, ombudsperson, Consumer Council, etc.?

SCOPE OF REGULATION

Determining what should be regulated is never an easy task. In broad terms, the alternatives to be analysed are:

- which parties (suppliers) have to be regulated,
- which sectors (market segments) have to be regulated, and
- which elements (prices, performance, standards) have to be regulated.

The answers to these questions depend to a large extent on the structure of the sector and the policy objectives.

Monopolistic supply of all telecommunications services

In this situation the party to be regulated is the monopolistic supplier. The regulator's task is to quantify the objectives that the operator must achieve and to ensure that these are met. These could be the rate of network expansion, universal service targets, quality of performance, tariffing structures, and the like. Most of the issues of a more technical nature, such as frequency management, numbering scheme, or technical standard are often left to the monopoly to manage.

Monopolistic supply of the network

In many cases the national operator has a monopoly in the supply of the network and its basic services, but competition is allowed in the supply of CPE, of services

ancillary or complementary to the basic network (such as paging or radio trunking), and of value added services on the basic network, such as private networks management, EDI and the like.

With regard to the monopolistic provision of the network and basic services, the national operator is usually subject to the same regulatory conditions as for a full monopoly, except that the regulator may also want to control the frequency spectrum and technical standards to facilitate connectivity to the network by third parties.

In areas of free competition the regulator's task will be mainly the protection of consumers' interest and of the technical integrity of the network. In many cases however, the market will not be so free, and only a few suppliers will be allowed to enter specified market segments. In these cases the regulator will develop more comprehensive rules to protect the interest of the customers, but also to regulate and control the interactions between suppliers, and those between them and the main operator. In general, rights and obligations will be set out in terms of general or specific "licences". The national operator may or may not be required to have a licence to provide services.

In order to protect the monopoly, the monopolist tends to be prescriptive in respect of how services supplied may be used. The services affected are mainly those supplied by large users and that can be made available by these users to third parties, typically customers. Monopolists attempt to prevent third party use and resale of services such as point-to-point leased lines, by either forbidding it or prescribing conditions (higher tariffs, licensing, etc.). However, rapid technological advances and difficulties with monitoring the use to which services are put often make these attempts at prescriptiveness ineffective and counter-productive. Examples are private voice networks (PVNs) and value added networks (VANS).

Competitive supply of the network

In some cases, largely in the most developed countries, more than one operator (usually two, but sometimes more) are allowed to provide nation-wide networks and services. This situation is the most complex in terms of regulatory requirements. In addition to the issues previously discussed, some other issues to be addressed are:

- whether or not special protection should be accorded to the new entrants. The nature and extent of the restrictions to be imposed on the larger operator have to be defined, as well as the conditions for lifting them in due course. If the national operator is still held responsible for the provision of the universal service, then there might be a need to protect the national operator's ability to fulfil such obligations, either by limiting the level and scope of competition allowed, or by imposing obligations on the other operators to contribute, directly or indirectly, to the universal service;
- definition of the terms and conditions under which the various networks are to be interconnected. These are usually expressed in terms of "interconnection agreements" between the various operators. In most cases, the terms of the

agreement are to be negotiated between the parties concerned, the role of the regulator being one of arbiter in case the parties cannot reach an agreement;
- the numbering plan usually becomes the responsibility of the regulator;
- to the extent that the provision of uneconomical services must still be subsidised, either by one operator only, or jointly by some or all, it is necessary to determine the level of subsidisation taking place. This leads to special disclosure requirements being imposed on the various parties, over and above the standard financial reporting obligations.

General regulatory areas

Other aspects that in general fall within the ambit of regulations are:

- setting technical and operational standards for the network(s),
- setting quality of service standards, and monitoring the performance of the operator(s),
- price regulation of services (if any), either in the form of detailed price controls (approval of tariffs), or of general price caps (the issue of prices is dealt more comprehensively in Issue 6).
- type approval of CPEs and rules for their connection to the network(s),

QUESTION 5.7: Who should be responsible for issuing the various types of telecommunications licence (fixed networks, mobile networks, Class licence, CPE, etc.)?
- Should there be distinct levels of authority?

QUESTION 5.8: Who should have the authority to prescribe how services may be used?

QUESTION 5.9: Who should be responsible for interconnection agreements
- Defining?
- Monitoring?
- Enforcing compliance?

QUESTION 5.10: Who should be responsible for the national numbering scheme?

QUESTION 5.11: Who should be responsible for the compilation of telephone directories and the yellow pages?

QUESTION 5.12: Who should be responsible for setting technical standards?
- In which areas?
- To what extent?
- For what purpose?

QUESTION 5.13: Who should be responsible for ensuring that the needs of disabled people are adequately provided for in terms of equipment and services?

QUESTION 5.14: Who should be responsible for setting quality of service standards?
- In which areas?
- To what extent?
- For what purpose?

At present, broadcasting in South Africa is regulated by the Independent Broadcasting Authority (IBA). Within the next decade, there is likely to be a

convergence of broadcasting and telecommunications technologies, business practices and functions in the development of the information highway.

QUESTION 5.15: Should broadcasting and telecommunciations be regulated by a single regulatory authority?

REGULATORY FRAMEWORK

Many different structures for regulatory authorities can be found in the world. Their main characteristics, and the differences between them, relate mainly to:

- organisational structure and status,
- decision-making processes, and
- implementation and enforcement mechanisms.

Organisational structure and status

The most commonly found variations in organisational structures and status for regulatory bodies are in terms of its level of independence, and of its composition and structure.

Independence and impartiality: Determined mainly by its functional and structural relationship with the state, and in particular with the ministry responsible for telecommunications policies. The main types to be found are:

- *a quasi-regulatory division within the national operator:* this structure is found mainly where there is a monopolistic, state-owned operator. It is cheap and effective, but it lacks credibility the moment any kind of liberalisation takes place,
- *a distinct body within the telecommunications ministry:* this situation is favoured where the government needs to assure a high level of responsiveness to its telecommunications policy initiatives. This is the structure operating in France, Germany and Mexico. Such a structure could be, or it could be perceived to be, less objective than a separate organisational entity in resolving conflict between the national operator and other parties, especially where the national operator is state-owned,
- *a semi-autonomous agency with delegated powers:* in this situation some or all of the regulators' decisions are subject to review and final approval by a minister. For example, the regulator could have the power to issue class licences, but the minister would retain full authority to license network operators. Direct political influence on the regulator would be less than in the previous case. This is the structure existing in Canada, Argentina and Britain.This regulator would have to develop its own expert staff and organisation,
- *a fully autonomous agency:* In this case the roles, powers and responsibilities of the regulator are fully and explicitly set out in legislation, and are independent of any control or interference by government,. This is the structure operating in the United States of America and Australia.
- *no distinct, industry specific regulatory authority:* in this case the regulatory function is performed by more general agencies, such as the Competition Board, the Consumer Council, etc. This is the case in New Zealand. There

are not many examples of this structure. It is suited where the market is liberalised to a very large extent.

The independence and perceived impartiality of the regulator are also affected by its relationship with other institutions, such as the national/predominant operator and other sectoral interests. This is affected inter alia by how the regulator is funded, the level of skills and expertise internally available, the decision-making processes (and consequent susceptibility to lobbying and influencing), and the enforcement power it possesses.

QUESTION 5.16: What type of telecommunications regulatory authority will be most appropriate for South Africa?

QUESTION 5.17: Should the telecommunications regulatory authority be independent of government?

- To what extent?
- To whom should it report?

QUESTION 5.18: How should it be funded?

Composition: An individual, or a board. A single entity or a multi-layer entity (e.g. a supervisory board with technical departments). It depends to a certain extent on the level of independence that is required, and on the complexity of the functions to be performed.

QUESTION 5.19: How should the regulatory authority be composed?

- Selection process and criteria?
- Appointment/removal?
- Structures?

Decision-making processes

Many variations are also found in the processes by which regulations are made.The more general aspects of the decision-making process are:

- *how issues and priorities are selected for consideration:* these are often mandated by the legislation. In some cases the legislation is quite specific, in other cases it only sets overall goals, while specifics are selected through a variety of processes, such as the regulator's own initiative, government's directives, recommendations from official telecommunications advisory bodies, or in response to requests from interested parties.
- *how issues to be considered are notified to interested parties:* this refers basically to the level of openness and consultation that must be applied in the regulatory process. Among the most commonly found are:
  - public notices, e.g. in the Government Gazette, briefly describing the issues to be considered, procedures to be followed, time limits, etc.,
  - briefing or issue papers. These are more extensive, informative documents explaining why an issue has to be addressed, possible alternative courses of action, supporting information and statistics, etc.
- *how the issues under consideration are discussed and decision taken:* this refers to the processes through which the problem to be solved is clarified, alternative options are identified and developed, and a final choice is made. In

some cases the regulator has a wide discretion about whom to consult, in what form, or to what extent the final decision is to be justified. In other cases a relatively rigid set of procedures is imposed on the regulator, in a "due process", where all interested parties have a right to be heard, all proceedings are documented and made public, and the reasons for decisions have to be given.

- *consultation with other parties :* in some instances the regulatory authority has to consult with other parties before taking a decision. Examples are:
  - the financial and economic ministries: in some countries these ministries have to be consulted in connection with decisions that may affect the economy (investment, foreign trade, etc.),
  - other agencies/bodies such as the Competition Board: in many countries the regulator is under specific obligation to consult with those entities responsible for determining the overall competitive environment.
- what appeal processes are available: the scope of the right to appeal depends in general on the legal framework and tradition of the country as well as its specific telecommunications legislation. Issues to be considered are:
  - whether the normal courts of the country or some special entity should hear an appeal against a decision of the regulator,
  - the extent of the right of appeal, i.e. how easy or difficult it is to access the appeal authority, and
  - the basis for appeal, i.e. whether the substance of the decision of the regulator can be appealed, or only the process followed by the regulator in reaching the decision can be contested.
- how special cases are dealt with: special provisions are sometime made for major decisions, such as the licensing of another operator. In some countries major licences of this nature do not fall within the regulatory authority but are reserved for the minister of telecommunications. Where the regulator is given such power, it has often to follow a special process to award such licences, such as a competitive bid or auction.

QUESTION 5.20: What processes should be used in selecting issues for decision /adjudication by the regulator?

QUESTION 5.21: What processes should be used by the regulator in decisions/ adjudications?

QUESTION 5.22: What processes of appeal, and to which authority, should be available against decisions/adjudications by the regulator?

QUESTION 5.23: How should the powers of the regulator be in relating to those of other authorities such as certain ministries, competition/anti-trust enforcement authorities, the Courts, etc.?

Implementation and enforcement mechanisms

The final and critical element of a regulatory framework is the mechanism available to the regulator to ensure that regulations are implemented, and compliance can be enforced. Here again various mechanisms are used, such as:

- the legal system, in which case violations are seen as either a civil or a

criminal offence,
- the power given to the regulator to directly issue orders enforceable by the courts, (or to obtain such orders from a court), the defaulting of which injunctions is an offence punishable by a court,
- the power given to the regulator to impose fines or penalties,
- the power given to the regulator to revoke licences.

QUESTION 5.24: What power of enforcement should the regulator have?

RADIO FREQUENCY SPECTRUM MANAGEMENT

The radio frequency spectrum is a national asset and a scarce resource that should be utilised in the interest of all South Africans, and in conformity with the international treaties and conventions to which South Africa subscribes. Overall frequency management, includes functions such as allocation to users, national and international co-ordination, and prevention of interference. Particular consideration should be given to the fact that technology trends indicate that radio technology will become more and more feasible for providing telecommunication services, thus it becomes essential to have the closest linkage between the licensing of telecommunications services and the licensing of the spectrum to be used by these services. A further consideration in deciding how the spectrum should be managed is the dire scarcity in South Africa of the highly skilled resources required in this very specialised field.

From this perspective, it is important to consider whether the totality of the spectrum should be controlled by a single body, or separate control should be exercised over different segments such as for telecommunications, broadcasting, defence, space research, etc., and what role should be played in this regard by the telecommunications regulator.

QUESTION 5.25: Who should be responsible for managing the radio frequency spectrum?
- Single or multiple authorities?

QUESTION 5.26: How can radio frequency spectrum allocation and usage be optimised?

QUESTION 5.27: How should radio frequency spectrum be valued?
- Could it be sold?
- Should radio frequency spectrum users pay for usage?
- On what basis (type of application, bandwidth, ability to pay)?
- Who should bear the cost of managing it?

QUESTION 5.28: What should be the criteria for allocation of radio frequency spectrum (need, application, perceived contribution to society)?

QUESTION 5.29: Should there be limits on the time for which radio frequency spectrum is allocated?
- If yes, on what basis?

QUESTION 5.30: Should the current allocation of the frequency spectrum be reviewed?

6 AFFORDABILITY & TARIFF SETTING

Tariffs (call, rental and installation charges) are a vital tool for the implementation of any chosen governmental policy or strategy. Social objectives, such as those of increased penetration and network expansion espoused by the RDP, may be given effect by tariffs for telecommunication services. The way in which tariffs are formulated is fundamental to ensuring that the needs of all sectors of society, and indeed those of the telecommunications operators, are met.

Affordability is the basic criterion which will ensure that all South Africans may have access to telecommunications services. Service costs (tariffs) that are too high will constitute a barrier to use for those persons unable to afford such costs. Indications are that installation and rental charges in particular constitute the greatest barrier to use in the South African market. However, a balance must be found between affordability and the needs of the operator to expand and upgrade the telecommunications network using the income it derives from tariffs. There are thus two intimately related factors which require consideration: affordability to the consumer; and network investment for the purposes of increased telephone penetration, productivity and economic growth.

Put more simply, if tariffs are too low, operators will be unable to expand into areas where no telecommunications infrastructure is currently in place, and if tariffs are too high, the needs of society for telecommunications services and all the benefits that accrue from these will not be met. Historically disadvantaged communities will be particularly affected.

Closely associated with the formulation of any tariff regime are the notions of universal service and universal access. Universal access can serve as an interim measure until universal service can be realised, that is public telephones can made accessible to communities, until a telephone in individual households can be provided. If the interim aim is to provide universal access through a range of public telephone services, this affects the extent to which operators have to reduce service costs to achieve affordability. On the other hand if the emphasis is placed on private telephones at an affordable cost to the majority of the population this will require operators to lower service costs or allot subsidies. Once again a balance is required.

The manner in and extent to which tariffs are regulated or controlled, will be determined predominantly by the environment in which the various operators function. Thus, in an environment of open and free competition, competitive forces should determine tariffs and there may be no need for any regulation. The needs and demands of the consumer should dictate that tariffs remain affordable. In competitive markets, the operators would set tariffs at affordable levels to attract new customers, but would weigh such competitive aspects against the need for further investment in the network.

Alternatively, in an environment in which one operator has a monopoly, if tariffs are not regulated the monopoly operator may be in a position to impose tariffs which do not take cognisance of the needs of society. In such an environment, the absence of competitive forces may necessitate the control or regulation of tariffs.

QUESTION 6.1 Should tariffs be regulated?

Depending on the structure of the telecommunications sector, there may be competition in certain areas of the sector but not in others.

QUESTION 6.2: Should tariffs be regulated or determined in areas of the telecommunications sector in which there is competition?

If telephone services are franchised (community telephones, phone shops, etc.) by the operators in order to rapidly provide access to such services, the tariffs set by the franchisees may not be related to cost and hence make the services less affordable.

QUESTION 6.3: Should the tariffs of franchised telephone services be regulated?

If tariffs should be regulated in some or all areas of the telecommunications sector, the question of who should determine or control such tariffs arises. If tariffs are required to reflect or implement government policy, it may be the place of the relevant governmental ministry to determine tariffs. Alternatively, it could be the Postmaster General, or an independent regulatory authority, or a governmental or independent board constituted specifically for this purpose.

QUESTION 6.4: Who should regulate tariffs?

If tariffs are regulated, the manner in which such regulation takes place is of fundamental importance. In this regard, a number of possibilities present themselves. Tariffs may, for example, be determined by reference to the costs which the operator incurs in providing the service. In this instance it would be necessary to determine: the costs which should be allocated to the service; the extent to which tariffs should be unbundled (each component of the service would be priced or costed independently from other components); the margin of profit which should be allowed over and above cost; the extent to which costing should be transparent and open; and whether this should be just to the regulator, or also the public. Tariffs may also be determined by price cap regulation. The regulatory authority could set a maximum tariff for any given service, and allow the operator to increase tariffs only by a stipulated amount per annum, such as the rate of inflation.

It may be that different tariff determination methods are required for different segments of the telecommunications sector, depending upon the level of competition in such segments. Certain methods of tariff determination may be applicable only to particular stages of telecommunications sector deregulation.

QUESTION 6.5: If tariffs are to be regulated, how should they be regulated in different segments of the telecommunications sector, and at various stages of deregulation?

Tariffs may be used to implement cross subsidies which give effect to the policy priorities of the government or the operator. The cost of certain services may be subsidised by the income derived from the tariffs for other services. For example, Telkom currently subsidises the cost of connection and monthly access charges and the cost of local call charges, by the revenue derived from long-distance and international calls. Cross-subsidisation may therefore be used to mitigate the barrier to entry, by making access to basic services more affordable. However, by virtue of the inflated tariffs payable for other aspects of the service, cross-subsidisation may distort competition and result in excessive tariffs for certain services.

If a regime of cross-subsidisation is implemented by an operator, other operators may have to be precluded from undercutting those tariffs upon which the operator relies to subsidise its other services. This may be necessary to ensure that the revenues of the operator are protected so that they are able to give effect to the policy consideration upon which the cross-subsidisation regime was based. However, such tariff protection mechanisms distort competition by prohibiting other operators from providing certain services at lower prices.

QUESTION 6.6: Should cross-subsidies be allowed?

- If yes, then which sectors of the telecommunications environment should be allowed to implement them, for what objectives, in what manner and for how long?

Cross-subsidies may or may not be transparent. Thus, the operator may itself allocate revenue derived from certain tariffs to subsidise other facets of the service, or alternatively, such allocations and the effects thereof may be subject to the scrutiny of the regulatory authority. In the latter instance, the effect and extent of any cross-subsidy would be determined on an ongoing basis by the regulatory authority, with due regard for the policy objectives of the scheme.

QUESTION 6.7: Should tariffs which are inflated for the purposes of effecting cross-subsidies be protected from competition by other operators?

QUESTION 6.8: Should cross-subsidies be transparent or not?

Because of high long-distance charges and relatively low leased-line charges, Telkom's current tariffs encourage bypassing of the public network which erodes its revenues. Telkom also currently subsidises the costs of connection, monthly access and local calls by charging high tariffs for long-distance and international calls. Thus, there is a distortion of the actual costs which Telkom incurs in providing a local or long-distance call. Such a scenario ensures that local calls are affordable, but markedly inflates the tariffs applicable for long-distance and international calls. Other operators are precluded from charging tariffs for long-distance calls which are less than the tariffs payable for Telkom's service.

The increase in Telkom's local call charges and the decrease in its long-distance call charges, in order to more accurately reflect the costs incurred by Telkom in providing such services, is commonly referred to as the "rebalancing" of Telkom's tariffs. Rebalancing reduces the subsidy available for local calls, but also reduces the tariffs for long-distance calls.

QUESTION 6.9: To what extent should Telkom's tariffs be rebalanced, and how should this be effected?

Closely associated with the RDP policy objectives of increased telephone penetration and productivity in areas lacking sufficient telecommunications services, is the concept of reducing barriers to use by making services in such areas affordable. Affordability may be effected by cross-subsidisation. This could be regionally based, in that income derived from tariffs payable in certain areas would subsidise the cost of services in disadvantaged areas. The reduced tariffs could apply to all services in certain designated areas, or to particular aspects of telecommunications services, such as connection fees and monthly access charges. Alternatively, reduced tariffs could be offered for certain services available on telephones accessible to the public (such as public payphones). Accordingly, barriers to entry could be reduced by the implementation of subsidised, cheaper tariffs in certain regions, for certain services, from certain telephones, or by a combination of these.

The notion of universal access, as opposed to universal service, would favour low call charges but would not affect the levels of installation and rental charges. Universal service principles, however, which would aim at private telephone access, may require the reduction of installation and rental charges to reduce barriers to use. Such a reduction may be subsidised by higher call charges.

Irrespective of whether or not reduced tariffs are offered on one or another basis to disadvantaged communities, the principle of affordability may be achievable by other means. An example is a system which accommodates payment for connection to the service on an instalment basis over a number of months. Another example is a credit facility: a user would, subject to certain limits, be allowed to make payments for services less frequently. Perhaps prices for different services could be differentiated, for example, lower grades of equipment or service could attract lower charges.

QUESTION 6.10: How can barriers to entry be lowered by making services more affordable to disadvantaged communities?

It would also be necessary to determine who should benefit from any system put into place to facilitate affordability. Sectors of society requiring the benefit of any such system may, among others, include historically disadvantaged communities, communities living in underdeveloped areas, elderly people, disabled people, and others.

QUESTION 6.11: Who should benefit from any mechanisms put in place to increase affordability?

Telecommunications is one of the important social sectors. An important consideration is thus the possibility that the telecommunications sector might subsidise the costs of other sectors such as health and/or education. Subsidisation could, for example, take the form of offering reduced tariffs to hospitals, clinics, schools, universities and technikons. However, the demands on the telecommunications sector to increase penetration and expand the availability of services, may mean that subsidies of this nature are not practical.

QUESTION 6.12: Should the telecommunications sector subsidise the telecommunications costs of other strategic social sectors?

- If yes, how should this be implemented, and to what extent?

THE EQUIPMENT SUPPLY INDUSTRY

South Africa has a long-established and significant telecommunications equipment industry, which currently has a turnover of some R3 billion and directly employs more than 6 000 people.

PREFERENTIAL AGREEMENTS

A system of long-term agreements, whereby the network operator (SAPT and later Telkom) guaranteed to purchase equipment locally, made certain of a market for local manufacturers and suppliers. Recently, Telkom has moved to an open tender system.

QUESTION 7.1: Should there continue to be preferential agreements between network operators and equipment manufacturers and suppliers, and if so, what form should they take?

PROTECTING LOCAL INDUSTRY

South Africa signed the Uruguay round of the General Agreement on Tariffs and Trade (GATT) and the associated Trade Related Investment Measures (TRIM) and Technical Barriers to Trade agreements in 1994. The World Trade Organisation (WTO) will now monitor and police these agreements, which are intended to lower barriers to international trade. The net effect on South Africa is that the market is now open to new entrants who can compete on favourable terms with South African companies, forcing the latter to reduce costs by whatever means are appropriate. The pressures of such competition can have a positive effect: they have already encouraged local companies to be more aggressive in seeking export markets, and they can also lead to a lowering of the costs of expanding the network. But, they can have a negative impact on the existing local manufacture and supply industry, which remains largely dependent on selling equipment locally. Protection may preserve or possibly increase employment, and maintain or even expand the expertise and skills-base in the local industry, but it will entail significant costs: higher costs to expand the network; efficiency losses due to delays in getting newer versions of the products into the local market; as well as discouraging the export orientation of local companies.

QUESTION 7.2: Should the network operator/s be required to give preference to local suppliers?

QUESTION 7.3: How can we encourage local industry to become more competitive internationally?

QUESTION 7.4: Should there be import duty protection for local companies?

QUESTION 7.5: How do we protect the local skills and knowledge base during the industry's transition from a broad manufacturing mandate for the local market to a narrower, globally oriented one?

QUESTION: 7.6: How can we ensure that the South African market is supplied with products of the latest and most appropriate technology at all times?

QUESTION 7.7: Should network operators also be allowed to produce telecommuncations equipment?

BALANCE OF TRADE

South Africa's imports of telecommunications equipment and services - either finished products or parts and components for local assembly - are very large in comparison with its exports. Any expansion of the network will place a heavy burden on our scarce resources for foreign exchange. Limiting imports will help our balance of payments. However, as we have seen, this may entail higher costs for network expansion.

QUESTION 7.8: What policies, if any, should be adopted to limit the adverse impact on our foreign exchange resources of any expansion of the network?

QUESTION 7.9: What should the state's vision be for the local telecommunications equipment industry?

THE STATE'S GOALS

The state's mission is to improve the standard of living of all its citizens. It can use the telecommunications industry to do this in a number of ways, such as

- as a development agent
- by developing the people working in it
- as a wealth creator.

Using the telecommunications industry in this way implies the development of material and intellectual goals for local production and export, which requires a capacity for research and development (R&D). Unlike most countries that can be compared to South Africa, we have not developed a credible R&D capability. The average spending by South African companies is well below 1% of turnover, while it is significantly more than 8% in many other countries.

QUESTION 7.10: How can South African telecommunications R&D be encouraged?

QUESTION 7.11: How should foreign companies be encouraged to establish manufacturing and R&D facilities in South Africa to service both the local and global markets?

SMALL AND MEDIUM TELECOMMUNICATIONS ENTERPRISES

A few large companies have dominated the South African telecommuncations equipment industry. In many countries, small and medium enterprises (SMEs) have proved to be the most dynamic creators of wealth, but in South Africa there are relatively few.

QUESTION 7.12: What direct action can be taken by the state and industry to encourage the development of small, medium and micro-enterprises (SM(M)Es)?

HUMAN RESOURCES FOR THE SECTOR

People are the wealth of a nation; they are both the means and the ends of the development process. People in the telecommunications sector need to be developed, to benefit them, and to benefit the sector. Issue 8 will primarily address the problem of trained personnel for the sector. However, the telecommunications sector can play a role in human resource development in general. In particular, it can be used in such enterprises as distance learning, and the health sector.

THE SOUTH AFRICAN QUALIFICATIONS AUTHORITY

The RDP and Education and Training White Papers both support an integrated education and training system for South Africa, firstly, to redress inequities, and secondly, to provide the human resources required for economic growth. The National Qualifications Framework (NQF) is the proposed means of creating an integrated system. The NQF Bill will establish the South African Qualifications Authority (SAQA). SAQA will be empowered to recognise the bodies which set education and training standards, and quality assurance bodies. The telecommunications industry, comprising network providers and equipment suppliers, is large, and employs many people over a range of levels of skill. In its training activities the industry will have to take the NQF into account to make sure that it has an adequately qualified workforce.

QUESTION 8.1: How can the telecommunications industry make use of the NQF to ensure that its education and training requirements are met, and that credits lead to progression for personnel and are recognised across the industry?

QUESTION 8.2: Should telecommunications be identified by government as a key area for assistance in human resources development?

SECONDARY EDUCATION

In general in South Africa, provincial government is responsible for secondary level training, while central government is responsible for the tertiary level, with some notable exceptions.

QUESTION 8.3: Is secondary level training being done adequately in institutions funded by provincial governments?

QUESTION 8.4: How can industry be encouraged to become more involved in secondary level training for the telecommunications sector?

QUESTION 8.5: Should industry do secondary level training itself, as is the case with the Telkom technical colleges?

- How can equal access to such institutions and the transferability of certificates be ensured?

QUESTION 8.6: How can equality of access to education and training for the telecommunications sector be ensured and monitored?

QUESTION 8.7: Should there be an Industrial Training Board for the telecommunications sector?

TERTIARY OR HIGHER EDUCATION

Tertiary education is becoming known as the higher education (HE) sector. There are 21 universities and 15 technikons in South Africa. Of the universities, only 8 offer engineering, and only 1 of them is an historically black university. Of the 15 technikons, 13 offer engineering. It has been made known[3] that South Africa is graduating only half of the engineers and a quarter of the technicians that it requires.

QUESTION 8.8: How do we expand the HE sector to meet the shortfall in its graduates for telecommunications?

QUESTION 8.9: Should all HE training be the sole responsibility of government, through its funding of universities and technikons, or should industry take more responsibility for their funding?

- If so, how?

QUESTION 8.10: Should there be some form of monitoring that ensures that the number of relevant graduates from HE institutions matches the requirements of the telecommunications sector?

POST-GRADUATE RESEARCH AND TRAINING

The South African communications industry has a very small (almost non-existent) R&D capability, which does not have the credibility of the R&D capabilities of comparable countries. The only focused research activity in the HE sector in South Africa at present is in the FRD and in Telkom, and this totals less than R2.5 million per year. The equivalent in Australia is about $AUS200 million. Some expertise is available at a few universities and technikons, but none of them has gathered a "critical mass' of telecommunications expertise adequate to develop new products, services and personnel. This may be the result of the short-term view which has governed many segments of the industry.

Telecommunications research in South Africa is currently driven largely by academic criteria. To be able to compete in global markets, R&D here, in the industry and in HE, will have to become much more pragmatic.

QUESTION 8.11 What is the need for post-graduate study and research into telecommunications?

- How can it best be structured for South African requirements?
- How can the telecommunications sector be more actively involved in the process?
- Should it include research into business and service provision in both the private and public sector?

[3] "2nd Biennial Conference of the Society of Electrical and Electronic Engineering Educators", February 1995

QUESTION 8.12: How should South Africa better develop and deploy the telecommunications expertise that does exist in the HE sector to create products and services, and hence wealth?

QUESTION 8.13: Should there be a forum which communicates the R&D needs of the South African telecommunications industry to R&D providers?

QUESTION 8.14: Is there a need for a specialist post-graduate Telecommunications School, such as those in France and China?

QUESTION 8.15: How should telecommunications R&D in the HE sector be funded?

- by government?
- by contributions (tax) levied from foreign communications companies doing business in South Africa?
- by a levy on the turnover of telecommunications service providers?

QUESTION 8.16: Who should administer the telecommunications R&D funds?

QUESTION 8.17: Should research be undertaken nationally, with an emphasis on the presently underserved and unserved markets (in terms of demography, income, affordability, and so on) to determine the long-term demand requirements for telecommunications services?

AFFIRMATIVE ACTION

The government of South Africa supports affirmative action as a conscious strategy to correct the social and gender imbalances in our society. The telecommunications industry is no exception, and can play a vital role. Affirmative action should play a major role in the telecommunications sector's efforts to develop the human resources it requires at all levels.

QUESTION 8.18: How can education contribute to redressing historical imbalances in employment practices in the telecommunications industry?

QUESTION 8.19: Should there be targets and quotas in training institutions aimed at the effective participation of black people and women in the industry?

- If so, how?

QUESTION 8.20 How should the telecommunications industry harmonise the requirements of industrial competitiveness with those of affirmative action and job creation?

- How can education contribute?

QUESTION 8.21: Should there be a specific affirmative action programme for the telecommunications sector which can avoid negative practices such as using black people as 'window dressing' or the employment of foreign black people in affirmative action positions?

At present, only five per cent of all managerial positions are held by black people and in the 100 companies listed on the Johannesburg Stock Exchange (JSE), only two per cent of approximately 2 550 directorships are held by black people.

Broadening the ownership base should be supported by capacity-building to provide the necessary skills-base to effectively staff organisations. The competitiveness, faith in, and support for black-owned enterprises will be upheld in this way.

QUESTION 8.22: How can telecommunications businesses be encouraged to appoint competent black managers and directors in large corporations?

- Should specific targets or quotas be set?
- How will implementation be monitored?

The telecommunications industry has traditionally been a male preserve. Very few women have been able to gain access to the sector or achieve positions of importance.

QUESTION 8.23: What steps should be taken to increase the participation of women at all levels in the telecommunications sector?

Conditions in the workplace were not favourable to black workers during the apartheid era.

QUESTION 8.24: What steps should be taken with regard to affirmative action for black workers in the workplace?

CONTINUING EDUCATION AND IN-HOUSE TRAINING

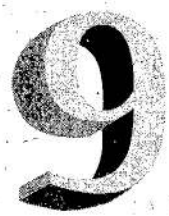
Continuing education and in-house training within the telecommunications sector is essential for it to stay abreast of rapidly advancing technology. Such training can also be a powerful influence on the sector's application of a policy of affirmative action. In addition, there may be heavy pressures on employment as a result of the deregulation of the sector.

QUESTION 8.25: How can in-house training in the sector be used as an effective tool for black advancement?

QUESTION 8.26: How can government encourage continuing education and in-house training in the telecommunications sector?

QUESTION 8.27: How can training be encouraged which will better equip employees to cope with the changing circumstances that will arise as a result of the down-sizing of companies if there is deregulation of the sector?

QUESTION 8.28: How can currently ungraded and unrecognised skills in the sector best be made use of?



REGIONAL AND INTERNATIONAL CO-OPERATION

The integration of South Africa into regional and international telecommunications systems will bring with it the benefits of synergy, greater participation in the global economy, improved personal and business communications, expanded trade and revitalised economic growth. South Africa, due to its location in Africa and its African conditions, together with its ability to manufacture products which are specific to the African market, is well positioned to provide technical and market support to Africa, and to provide African solutions to African problems.

The participation of South Africa in regional and international activities in telecommunications should be considered at two levels: the consultative and the operational.

POLICY DEVELOPMENT

At the consultative level South Africa participates in the development and harmonisation of telecommunications policies. This is carried out in the context of the International Telecommunication Union (ITU) and other international bodies such as the Pan-African Telecommunications Union (PATU) and the Southern African Transport and Communications Commission (SATCC). These organisations provide South Africa with the opportunity to take part in international consultations and policy decisions, to learn from the experiences of others, and to establish business networks for the industry. The Ministry of Posts, Telecommunications and Broadcasting, and more specifically the Department of Posts and Telecommunications (DPT), represents the government of South Africa as the Party to these international treaties, covenants and agreements.

QUESTION 9.1: Is South Africa adequately represented on international and regional telecommunications bodies?

- Should the Ministry continue to be the official representative, or should this responsibility fall on a future regulatory authority?
- Should civil society participate in these bodies?

QUESTION 9.2: What contributions can international and regional telecommunications organisations make to the South African telecommunications sector, and how can South Africa contribute to these organisations?

INVESTMENT AND USE

At the operational level, South Africa participates in international telecommunications organisations, both private and intergovernmental, in two ways: a user of their telecommunications facilities, and an investor (Signatory). South Africa is already a user of, and investor in, intergovernmental organisations such as the International

Satellite Communications Organisation (INTELSAT), and the International Mobile Telecommunications Organisation (INMARSAT). In fact these are the only two organisations providing satellite capacity to South Africa at present. Currently the government has designated Telkom as the sole Signatory to these organisations, in line with the requirements of the respective treaties. This situation may change, however, as the treaties may soon be amended to allow the designation of more than one signatory per country, and reform in the telecommunications sector in South Africa may allow more than one operator.

QUESTION 9.3: Who should the South African Signatory to the relevant international telecommunications treaties and agreements be?

QUESTION 9.4: Should more than one Signatory to INTELSAT or INMARSAT be designated in the future, if there are multiple operators in South Africa?

Another treaty-based satellite organisation, the Regional African Satellite Communications Organisation (RASCOM) has been established recently to cater specifically for the needs of the African continent. RASCOM is a regional enterprise co-operatively owned by several African countries for the development of regional satellite services in Africa. South Africa's participation in RASCOM, as an investor and as a user, would dramatically improve the viability of this organisation, to the benefit of the whole continent. It would also bring benefits to South Africa, through a closer relationship with Africa's telecommunications operators and policy makers, which would assist in network harmonisation and expansion and hence broaden South Africa's market opportunities.

A country can participate in a treaty-based satellite organisation as a Party to the treaty. Telecommunications organisations under the jurisdiction of the Party can then participate in the satellite organisation as investors and users of satellite capacity (Signatory), or as non-investing users. The latter can normally acquire capacity only through the national Signatory(ies), but in some cases also directly.

QUESTION 9.5: Should South Africa become a Party to RASCOM?

QUESTION 9.6: To what extent should telecommunications operators in South Africa using satellites be obliged to participate in RASCOM, in addition to, or in place of, other satellite systems, as a means of promoting the development of an African telecommunications infrastructure?

- Should this apply only to usage or also to investment?

Participation in other international satellite and submarine cable systems is open to South Africa. Telkom is already a major shareholder of the SAT-2 Atlantic submarine cable, and PanAmSat, a private satellite organisation, will soon be providing capacity to South Africa. Developments such as Iridium and Globalstar in the satellite field, Africa One and Flag in the optical fibre cables field, and others, may offer South Africa access to additional international capacity, as well as investment opportunities.

QUESTION 9.7: Should participation in such a system be a matter of government policy, or should the decision be based on the business needs of the operator(s)?

INVOLVEMENT IN SOUTHERN AFRICA

The development of a common infrastructure in the Southern African region would give further impetus to export opportunities for the telecommunications industry in South Africa. South Africa could take the lead in developing a pan-African terrestrial network, in co-ordinating frequency allocation plans, in organising training, and in developing a common African position on many international telecommunications issues. In addition, the possibility exists for South Africa to develop a hub for switching international traffic from the rest of Africa onto the international undersea cable network. There are many ways in which South Africa could become involved in the Southern African telecommunications environment, without creating regional conflict through the fears of economic regional colonisation. To mention just a few:

- invest in multinational/multi-company telecommunications systems, such as undersea cables to other continents and countries, or various satellite systems for fixed and mobile telecommuncations.
- Promote co-operation in regional telecommunications training institutes, R&D centres and consultative and planning councils.
- Encourage the establishment of regional standards structures to develop and promote standards, for example interoperability, equipment, or to facilitate "roaming" arrangements/agreements among South African mobile telephone service providers and those in other countries in Africa.
- Promote the establishment of African terrestrial networks with links to all African countries, to service the domestic and regional needs.
- Invite governments and companies in Afria to invest in manufacturing companies based in Southern Africa, so that the resources already available here can serve the rest of Africa and lead to the forging of stronger economic and trade ties.
- Ensure that this is achieved without creating regional conflict through the real fears of economic, regional colonisation.

QUESTION 9.8: What role should South Africa play in telecommunications development in Africa?

As South Africa re-establishes itself in the global community, the telecommunications sector needs to re-align itself with compelling international telecommunications phenomena. Many issues need to be considered.

QUESTION 9.9: Should the South African telecommunications sector move decisively to be an active, non-marginalised player in the development of the "global information highway"?

- What implications does this have?

QUESTION 9.10: Should influential national policy positions be formulated in response to key global developments such as: electronic trading and EDI-related standards; the use and development of Internet; the development of knowledge-based industries and new wireless technologies such as PCS and DECT?

LEGISLATIVE REFORMS

The introduction of telecommunications legislation would affect not only the telecommunications sector itself, but also the broader legal and legislative structure of which this new legislation would form part. The substantive provisions of the new legislation should thus complement the provisions of existing law, in as expedient and practical a manner as possible.

The possible legal implications of the introduction and implementation of a new Telecommunications Act include:

- the repeal or modification of existing legislation pertinent to telecommunications
- the repeal or modification of legislation in some manner related to telecommunications
- the effects of regulations issued in terms of existing legislation
- the effects of new legislation on existing licences, issued in terms of existing legislation or regulations
- the legal basis upon which parastatals, currently empowered by statute, would be allowed to operate telecommunications networks
- the fate of laws pertaining to the autonomy of the TBVC states, in the light of the substantive provisions of the new legislation, and policy considerations
- the future role of agreements between participants in the telecommunications sector, previously concluded for the purposes of compensating for discrepancies or omissions in legislation.

The Green Paper invites comment on Issue 10 not on substantive aspects of policy or regulation, but rather on the practical implementation of the mooted Telecommunications Act.

The repeal or amendment of existing legislation and regulations would necessarily require, first, the identification of those laws not consistent with the new legislation, and second, a determination of the extent to which such laws should be repealed or amended. Given the potential scope of the new legislation, laws which may be affected could include the following statutes, and the regulations promulgated in terms of such statutes:

- *Post Office Act No. 44 of 1958 as amended*
  Largely responsible for empowering the Postmaster General and Telkom, and for determining the positions they each hold in the telecommunications sector.

- *Radio Act No. 3 of 1952 as amended*
  Primarily controls the manner in which the Postmaster General is empowered to issue licences for the use of frequency, and to control the manner in which, and the equipment with which, such frequency is utilised.

- *Labour Relations Act No. 28 of 1956 as amended*
  Governs the relationship between employee and employer in the workplace, and other substantive aspects pertinent to the labour environment.

- *Broadcasting Act No. 73 of 1976 as amended*
- *Independent Broadcasting Authority Act No. 153 of 1993 as amended*

- *Standards Act 29 of 1993*
- This Act provides for the promotion and maintenance of standardisation and quality as regards commodities and the rendering of services, under the auspices of the South African Bureau of Standards. In the light of the diminishing gap between the telecommunications and broadcasting sectors, the provisions of these Acts may require consideration.

- *Interception and Monitoring Prohibition Act No. 127 of 1992 as amended*
  This statute specifies procedures pertinent to the tapping or monitoring of communications.

- *Maintenance And Promotion Of Competition Act No. 96 of 1979*
  Provides for the constitution of the Competitions Board to investigate restrictive business practices.

- *Board On Tariffs And Trade Act No. 107 of 1986 as amended*
  Provides for the establishment of the Board on Tariffs and Trade to monitor matters pertinent to imports.

- *Eskom Act 40 of 1987*
  Facilitates the incorporation of the parastatal, Eskom.

- *Legal Succession To The South African Transport Services Act No. 9 of 1989*
  Facilitates the incorporation of the parastatal Transnet, and reaffirms Transnet's right to provide communications networks for its own use.

QUESTION 10.1: Which statutes and regulations should be subject to review for the purposes of initiating repeals and/or amendments?

The identity of those laws finally amended or repealed to facilitate the introduction of the new telecommunications legislation would depend on the structure of the sector being finally determined. In addition, the manner in which such laws are to be repealed or amended requires further consideration. It may be part of a two-tier process. For example, certain fundamental aspects in Acts such as the Post Office Act and Radio Act may have to be repealed to facilitate the introduction of the new telecommunications legislation. However, in order to facilitate a smooth and viable

transition, the repeal or modification of, in particular regulations, may have to take place on a phased basis. Thus, it may be desirable for any new regulatory entity to effectively reregulate its own environment, whether or not the Act were finalised.

QUESTION 10.2: How, and when, should obstructive Acts and regulations be repealed or amended?

New telecommunications legislation, introduced subsequent to the democratic, consultative process, would necessarily reflect current government policy. Licences issued in terms of redundant telecommunications legislation and policy, may not accurately reflect the revised policy. It may be desirable to amend existing licences or replace such licences to more accurately reflect the objectives of governmental and social policy.

Such a supplementation or replacement may be legally and commercially viable in certain instances, and not in others. Practicality and legality may dictate that such licences would have to remain in place and that any changes envisaged or desired by any new regulatory authority, or by the government, would have to be effected within the framework of these licences.

QUESTION 10.3: How should licences existing at the time of the introduction of new telecommunications legislation be treated?

QUESTION 10.4: How can the process of legislative reform in the telecommunications sector interface with similar processes in other sectors?

At present, parastatals such as Telkom, Transnet and Eskom, derive their authority to install and operate telecommunications networks by statute. Given the close relationship between such companies and the government, empowerment by statute may very well be appropriate. However, depending on the nature of the competitive and regulatory regime which will be implemented (after a consultative process), it may be preferable and practical for all telecommunications operators to be authorised to operate by a licence.

If the principle of licensing operators such as Telkom were applied, the conditions regulating the operator's activities would be contained in such licences. Indeed, if parastatals are to be truly accountable to any regulatory authority, it may be that authority and powers derived from other legislation will be problematical and impractical. Alternatively, close government ties may necessitate the formulation of authority and terms of reference within the realm of legislation. Perhaps a combination of powers derived from legislation and licensing would be appropriate.

QUESTION 10.5: Should parastatals such as Telkom be licensed?

- Please expand upon your answer.

On the basis of perceived inadequacies and shortfalls within the current legal structure of the telecommunications sector, various players within the sector have entered into supplementary contracts. In certain instances, these supplementary

contracts were concluded with the Postmaster General and the government, and contain substantive conditions on the provision of certain services. Similarly, certain contracts were concluded to ensure a degree of regulation by the Postmaster General over Telkom, which was deemed by the parties to be lacking in the legislation. In some instances supplementary contracts were concluded between Telkom and other parties in order to formalise Telkom's role as de facto Regulator in respect of the provision of certain services by such parties.

Supplementary contracts were signed with Telkom as well as the Postmaster General. Due to the shortcomings of the present legislative environment, Value Added Network (VAN) providers entered into agreements with Telkom in order to facilitate the provision of VAN services. These are another form of supplementary contract that will have to be properly addressed in the new legislation.

The termination of supplementary contracts would generally require the consent of all the parties involved. Consent may not be forthcoming if certain principles in the contracts are not dealt with in the new legislation to the satisfaction of all concerned. If, however, the matters dealt with in supplementary contracts are indeed dealt with in the telecommunications legislation, the termination of such contracts would not be problematical. It may be desirable for these agreements to remain in place to reflect the agreement of the parties about matters extraneous to the new Act. Supplementary agreements will therefore not necessarily pose a problem, unless their terms are found to contradict the terms of the new Telecommunications Act.

QUESTION 10.6: What role should supplementary contracts have in a new South African telecommunications legal framework?

QUESTION 10.7: Should consideration be given to the terms of supplementary agreements in order to gauge the needs of the telecommunications sector?

Paragraph 229 of South Africa's interim Constitution provides that:

> "Subject to this Constitution, all laws which immediately before the commencement of this Constitution were in force in any area which forms part of the national territory, shall continue in force in such area, subject to any repeal or amendment of such laws by a competent authority."

This provision effectively retains the laws passed in terms of the constitutions of the former TBVC territories. While these areas in most respects no longer operate as autonomous regions, certain laws pertinent to the establishment of autonomous telecommunications operators and regulatory authorities remain effective.

Discussions are currently taking place with a view to effecting the reincorporation of the telecommunications sectors in these areas into a unified South African telecommunications environment. These discussions involve the relevant regulatory authorities, telecommunications operators and unions. It may be that the laws upon which the problem is based should be repealed by the new Telecommunications

Act, in order to best facilitate the reincorporation process. Alternatively, any repeal of the these laws may require legislators to take cognisance of certain practicalities, such as the progress in discussions between all interested parties. Not only is the purpose of legal reform at issue, but also the timing of such reform.

QUESTION 10.8: How and when should the laws currently impeding the reincorporation of the former TBVC states into the South African telecommunications sector be repealed?

Closely associated with any question of legal reform is the question of the rights of government to intercept any telecommunications message or signal. In the light of the phone-tapping practices of the former government during the apartheid era, it may be necessary to consider whether any government or any department or vehicle of the government should have the right to intercept any telecommunications signal or call. One view is that any such right or activity is an infringement of the "right to privacy" in South Africa's interim Constitution. Another view is that in certain circumstances government is entitled to tap telephones or intercept calls, but that this right should have to be derived by order of the court in any given instance.

The interception and monitoring of communications are currently regulated by the Interception and Monitoring Prohibition Act No. 127 of 1992 as amended by the Intelligence Services Act No. 38 of 1994. In terms of the Act, a judge is appointed by the Minister of Justice and he or she may issue a directive that communications may be intercepted and/or monitored.

QUESTION 10.9: Should government be entitled to intercept telecommunications traffic?

- If yes, then to what extent and under what conditions?

QUESTION 10.10: Is the issue best addressed in the context of the proposed Telecommunications Act?

GLOSSARY

AFFORDABILITY
The ability of a user to pay the price charged for a telecommunications service, such as connection, rental and call charges.

AUSTEL
Australian telecommunications regulatory authority

BOT
Build-Operate-Transfer
System in which a network is built by an investor (usually an operator) other than the national operator, is operated under certain conditions, and for a certain period, by the investor, and it is transferred to the state or the national operator at the end of the period.

COMMERCIALISATION
The transformation of a state department enterprise into a commercial organisation, such as a company, while retaining state ownership. Usually this is aimed at freeing the state enterprise from bureaucratic rules and allowing it to be managed according to commercial principles.

CPE
Customer Premises Equipment

CROSS-SUBSIDY
The financing of less profitable, or unprofitable services from the profit from other services, usually by means of unbalanced tariffs.

CSIR
Council for Scientific and Industrial Research

CUSTOMER PREMISES EQUIPMENT (CPE)
Devices such as telephones, PABXs, faxes, teleprinters, which are located in users' premises and are connected to the telecommunications network.

DEREGULATION
The elimination or restriction of monopoly, privileges, and the promotion of competition, in the provision of equipment services. Usually it is accompanied by the introduction of a new set of regulations (reregulation) to aid the emergence of a free market, while still ensuring the achievement of public service goals, such as universal service.

DPT
Department of Posts and Telecommunications
The South African Department of Post and Telecommunications is part of the Ministry of Posts, Telecommunications and Broadcasting. It is responsible for managing the frequency spectrum, except that part which is allocated to broadcasting. It is also responsible in general for administering the Post Office Act, and for issuing licences for CPE and other telecommunications services (e.g. Mobile) as delegated to it by the Minister.

DECT
Digital European Cordless Telephony

DUOPOLY
The supply of goods and services by only two suppliers.

EDI
Electronic Document Interchange

ESKOM
Electricity Supply Commission
State-owned organisation responsible for providing electricity services. It is also allowed to provide telecommunications infrastructure for its own use.

FCC
Federal Communications Commission
USA federal telecommunications regulatory authority

FLEETCALL
Private company, one of two licensed to provide national radio trunking in South Africa.

FRD
Foundation for Research and Development

FREE MARKET
The supply of goods and services by a large number of suppliers to a large number of consumers, without any limitation on the numbers and consumption, and such that prices are determined exclusively by supply and demand.

FREQUENCY SPECTRUM
The totality of the electromagnetic waves that are available and used for the transmission of signals at a distance without using physical media (radio transmission). The spectrum is subdivided in "bands" that are used for different purposes, such as telecommunications, broadcasting, telemetry, space exploration.

GATS
General Agreement on Trade in Services

GATT
General Agreement on Tariffs and Trade

GII
Global Information Infrastructure

GSM
Global System Mobile

HE
Higher Education sector

IBA
Independent Broadcasting Authority

IBRD
International Bank for Reconstruction and Development (World Bank)

IFC
International Finance Corporation

INMARSAT
International Mobile Satellite organisation
International, treaty-based satellite Organisation, responsible for the provision of telecommunications services to mobile users (ships, planes, etc.) on global services at non-discriminatory prices (global universal service).

INTELSAT
International Telecommunications Satellite Organisation
International, treaty-based satellite organisation responsible for the provision of telecommunications services between fixed points on global services at non-discriminatory prices (global universal service).

INTERCONNECTION
The connection with each other of the telecommunications networks of different operators so that signals or services are transported over such interconnected networks.

ITU
International Telecommunications Union

JSE
Johannesburg Stock Exchange

LEASED CIRCUITS
Circuits made available by an operator to a user on an exclusive and dedicated basis for use at his/her control. The use to which they are put is usually made known to the operator as such knowledge is necessary for properly engineering the circuits, and determining the changes.

M-NET
Private company licensed to provide broadcasting services nationally.

MONOPOLY
Supply of good or services by a single supplier.

MTN
Mobile Telecommunications Network
Private company, one of two licensed to provide national mobile cellular telephony in South Africa.

NETWORK
The system of telephone exchanges connected to one another, the transmission systems used to interconnect them, and any other equipment used to establish and maintain such interconnections.

NQF
National Qualification Framework

OFTEL
Office for Telecommunications

OLIGOPOLY
Supply of goods by a limited number of more than two.

ORBICOM
Private organisation, licensed to provide telecommunications services for the distribution of broadcast signals for its parent company (M-Net).

PABX
Private Automatic Branch Exchange

PANAFTEL
Pan African Telecommunications network

PANAMSAT
Private company providing satellite communication facilities on a global scale.

PARTY
The government (and its official representative, usually a state department) that becomes a member of an international telecommunications organisation (e.g INTELSAT, INMARSAT, EUTELSAT, RASCOM), which is in the nature of an international co-operative put in place to provide telecommunications services on an international basis.

PATU
Pan African Telecommunications Union

PCS
Personal Communications System

PERFORMANCE STANDARDS
The minimum levels of service that a service provider makes available to its customers. It includes aspects such as the quality of transmission, the time taken to provide a service, the time taken to repair a fault, the accuracy and completeness of billing information, etc.

PRICE CAPS
Limits imposed on the prices, or on the price increases, that operators may charge for the services they provide.

PRIVATE (VOICE) NETWORK
A private voice network is a network consisting of two or more private automatic branch exchanges used by the same legal entity, interconnected by one or more direct lines leased from the telecommunications operator, and used to establish calls between extensions of the separate PABX's without routing via the public switched telephone network. Monopolists tend to prevent the leased line being used to interconnet an exchange call to one PABX to an extension on the other PABX.

PRIVATISATION
Sale of the equity of a state owned enterprise to private parties.

PSTN
Public Switched Telephone Network

PTO
Posts and Telecommunications Organisation

PTT
Posts Telegraphs and Telephones

PUBLIC SERVICE OBLIGATIONS
Obligations to provide certain services (to

certain sections of the population, or in certain areas), imposed by the state on certain service providers. The obligations are imposed in the public interest (e.g. universal service) in exchange for special consideration (e.g. monopoly rights, exclusive licences).

PUBLIC SWITCHED TELEPHONE NETWORK (PSTN)
A telephone network which provides service to any member of the public, without discrimination, at universally applicable and published tariffs.

Q-TRUNK
Private company, one of two licensed to provide national radio trunking in South Africa.

RADIO SPECTRUM
See frequency spectrum

RASCOM
Regional African Satellite Communications Organisation

RDP
Reconstruction and Development Programme

R&D
Research and Development

REGULATIONS
The conditions set by the regulator to participate in a market, such as conditions of entry, areas of supply, price caps, standards, etc.

RFS
Radio Frequency Spectrum

SABC
South African Broadcasting Corporation

SAQA
South African Qualification Authority

SATCC
Southern African Transport and Communications Commission

SAPT
South African Posts and Telecommunications

SENTECH
State-owned organisation licensed to provide telecommunications services for the distribution of broadcast signals for its parent company, (SABC).

SIGNATORY
The national organisation (usually an operator), designated by the Party to an international telecommunications organisation, to be responsible for investing and participating in the governance, planning and operations of the international organisation, and for making international services available to national users.

SM(M)E
Small and Medium (& Micro) Enterprises

TARIFFS BALANCING
Establishing tariffs for the various services that are related to the cost of providing these services, thus eliminating the need for cross-subsidisation of certain services by others.

TBVC
Transkei, Bophuthatswana, Venda, Ciskei

TECHNICAL STANDARDS
The technical characteristics that networks and equipment must possess to ensure interconnectivity, interoperability, quality of service, safety, etc.

TELECOMMUNICATIONS
Essentially communications at a distance. Transmission and reception may be by one of three methods: electrical signals along a conductor, electromagnetic radiation and light signals along an optical fibre.

TELKOM
State-owned company, responsible for providing national and international telecommunications services, where it has an exclusive privilege in terms of the Post Office Act.

TRANSNET
State-owned company, responsible for providing national and international transport services. It is also allowed to provide telecommunications infrastructure for its own use, which it does via TRANSTEL.

TRANSTEL
Business unit of TRANSNET, is allowed to provide telecommunications infrastructure and services to TRANSNET for its own use.

TRIM
Trade Related Investment Measures

TYPE APPROVAL
Testing and certifying that a class or type of device, attachable to the network, meets the interface specifications required for interconnection.

UNIVERSAL ACCESS
The ability given to any person, without discrimination, to easily access and use a telecommunications service. In its simplest form this means at least access to a telephone service provided mainly, but not exclusively, by means of a public telephone.

UNIVERSAL SERVICE
The use of a telecommunications service, made available for exclusive use to any person who wants it, without discrimination. The nature of the service varies from country to country, depending mainly on the level of socio-economic development. In its simplest form it means universal availability of the telephone service.

VALUE ADDED NETWORK
The term "value added network" describes a concept that was created by monopolistic suppliers of telecommunication networks to discourage users of leased point-to-point data circuits from making these circuits available to third parties, either free of charge or at a cost. The monopolist attempts to prescribe onerous conditions for much third party use, classifying it as a VAN, and charging higher than standard rentals. The operators' rationale behind these conditions is that it is to minimise the loss of revenue. Users of leased lines either permit third party access at no cost as part of their overall service to clients on charge for the specific service which could also include adding value such as data processing, protocol conversion, store and forward facilities and so on.

VANS
Value Added Network Services

VODACOM
Private company, one of two licensed to provide national mobile cellular telephony in South Africa.

WTO
World Trade Organisation

APPENDIX 1

RECONSTRUCTION AND DEVELOPMENT PROGRAMME

CHAPTER 2: MEETING BASIC NEEDS

SECTION 2.8 TELECOMMUNICATIONS

2.8.1 Telecommunications is an information infrastructure and must play a crucial role in South Africa's health, educaition, agriculture, informal sector, policing and safety programmes. Under apartheid the provision of telecommunications was racially distorted. For black people it is estimated that less than 1 line per 100 persons is in place compared with about 60 lines per 100 white persons. Other countries with comparable per capita wealth have 30 lines per 100 persons. The situation is far worse in rural areas.

2.8.2 The existing parastatal, Telkom, is restricted by heavy debt from engaging in substantial further borrowing, and an indiscriminate privatisation process has fragmented the telecommunications system. The lack of infrastructure has also restricted the provision of sevices to peri-urban and rural areas. Other telecommunications networks are not well integrated into the existing Telkom network.

2.8.3 The telecommunications sector is an indispensable backbone for the development of all other socio-economic sectors. An effective telecommunications infrastructure which includes universal access is essential to enable the delivery of basic services and the reconstruction and development of deprived areas.

2.8.4 The RDP aims to provide universal affordable access for all as rapidly as possible within a sustainable and viable telecommunications sytem; to develop a modern and integrated telecommunications and information technology system that is capable of enhancing, cheapening and facilitating education, health care, business information, public administration and rural development, and to develop a Southern African cooperative programme for telecommunications. In terms of the RDP, telecommuniciations services must be provided to all schools and clinics within two years.

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