

QUESTION 7/I

Universal
access/service



ITU-D

STUDY GROUP I

2nd STUDY PERIOD (1998-2002)

Final Report

Telecommunication Development Bureau (BDT)

International Telecommunication Union



THE STUDY GROUPS OF ITU-D

The ITU-D Study Groups were set up in accordance with Resolution 2 of the World Telecommunication Development Conference (WTDC) held in Buenos Aires, Argentina, in 1994. For the period 1998-2002, Study Group 1 is entrusted with the study of eleven Questions in the field of telecommunication development strategies and policies. Study Group 2 is entrusted with the study of seven Questions in the field of development and management of telecommunication services and networks. For this period, in order to respond as quickly as possible to the concerns of developing countries, instead of being approved during the WTDC, the output of each Question is published as and when it is ready.

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CHAPTER I

Final report

1 Reaffirmation of the validity of the concept of universal service and its current significance

Until a while ago, many telecommunication service options were regarded as belonging solely to the world of business and were in some cases treated as luxuries that were not for general consumption. It is no doubt the vision of a future world in which “**knowledge**” is the essential factor in a nation’s development that has led to the conclusion that everything that contributes to the accumulation of information content is not just positive and convenient, but fundamental and indispensable.

The problems raised by telecommunications may be summarized as follows:

- a) As previously mentioned, in the times in which we live **knowledge** is clearly seen to have outstanding and growing importance as the engine of development in society. It has always been thus, but its present level of importance is unprecedented.

How do humans obtain **knowledge**? No doubt through innate processes of introspection and reasoning, as well as experience. But also by acquiring **knowledge** produced by other people’s processes of introspection, reasoning and experience. The latter are achieved by means of “**communications**” between people. Thus, humankind’s greatest advances have to a considerable extent been associated with developments and innovation in the means of communication: language, writing, alphabet, printing, telegraph, telephone, radio, television, etc.

From their earliest days, humans have sought to achieve forms of communication that overcome the constraints of time and distance. It is for this reason that human development has also been stimulated by anything that facilitated communication by counteracting the effects of distance and, wherever possible, time. A case in point was the possibility of communication between different generations. This gave rise to the first libraries which are today enhanced by the contribution of “**information technology**”, by **databases** and by easy access through today’s powerful **telecommunication networks**, especially the **Internet**. But physical means of communication were also important and remain so. The invention of the wheel and of sailing vessels were also major factors in the development of trade and postal systems. More modern examples are the invention of the steam engine, the railway, the motor car, the aeroplane, jets and, more recently, satellites.

For all the above reasons, that which we know as “**TELECOMMUNICATIONS**” is of undeniable importance to the development of modern society. Any improvement in telecommunications, anything which assures their optimum dissemination, has a direct impact on the **knowledge** acquired by a specific nation or social group at a certain point in its history. Telecommunications not only influence the changes taking place in the modern world, but are their main cause.

Changes in education, methods of work, medicine, industry, trade, etc. are defining new forms of interaction between human beings, which affect (and will certainly modify) family life and traditional political structures, probably giving rise to new ways of understanding democracy and, perhaps, the scope of what is today understood by “**FUNDAMENTAL HUMAN RIGHTS**”.

Access or lack of access to advanced telecommunication media, owing to their significance for the degree of **knowledge** achieved by specific social groups, is generating a new form of social marginalization between different countries (as well as between social sectors and/or areas in the same country), which is potentially more serious than any hitherto experienced by human society.

For this reason, facilitating access to **knowledge** and, in consequence, to **telecommunications**, is more important today than ever before. Nowadays, therefore, telecommunications are reckoned among basic or primary necessities.

The advent of new telecommunication options which have not (as a rule) been considered basic up to now, as in the case of the Internet, but which are of tremendous significance to the younger generation, make achieving universal access to telecommunications an even more critical and complex issue. The subject of telecommunication media applied to “education” is closely related to this state of affairs.

In view of the foregoing, the **gradual achievement of optimum access** – and, **ultimately, universal access** – to such services becomes an inescapable policy requirement.

There can be no denying that the economic gulf between nations, far from narrowing, will grow at an ever faster pace between those that have access to modern forms of telecommunications and those deprived of that possibility.

Apart from this, there is the low population density in many parts of the globe, which creates a further difficulty: the high cost of bringing telecommunication services to all areas of a country. However, it is precisely in remote areas that such services are of the utmost value, not just in contributing to nationwide economic development, or in serving as a tool of special importance in enabling people everywhere – even those who live in the most thinly populated areas – to have access to comparable levels of education, but also in dealing with social matters of particular significance, such as telemedicine.

This naturally makes it necessary to determine which services must inevitably have universal scope, as well as to establish – and this is a much more complex issue – what is meant by the terms “universal”, “affordable” and “accessible”. Furthermore, other questions will need to be answered, such as the social cost of achieving such universality, how to obtain the necessary resources, etc.

- b) At the same time, in a process not totally separate from the development of telecommunications, highly important policy changes have been taking place: the trend towards democratic structures, based on respect for fundamental human rights and, within this process, **gradual economic liberalization** accompanied by more or less extensive **privatizations** of previously State-owned firms, with the opening up to competition of activities which until recently were regarded as monopolistic.

Telecommunications is a case in point in terms of the opening up to private capital under conditions of more or less open competition.

It is this process which, in the first instance, has undoubtedly led to the need to repeal earlier regulations (de-regulation) and to produce new forms of regulation (re-regulation or neo-regulation) in order to protect consumer rights and safeguard competition in the new environment.

The new models defined by the liberalization of telecommunications, together with the task identified in the previous section (i.e. the need to take the necessary action to secure the universalization of telecommunications) pose a complex problem, the importance of which nevertheless calls for a solution that satisfies the need for universal access/service in every social context, without undermining or distorting fair competition among the different players in the telecommunication market.

It should be noted that, according to some experts, there is no clear evidence that competition and a multiplicity of operators do not substantially contribute to the universalization of telecommunications. They point to international experience showing that increased competition is always accompanied by a fall in prices and increased service penetration. Nevertheless, the examples usually

cited to support the promotion of competition for the achievement of universal access/service objectives are the United States of America and the United Kingdom; yet these are exceptional cases not readily commensurable with other countries, particularly countries where the per capita income is lower.

In this connection, Professor Eli Noam of the University of Columbia regards universal service as a programme of subsidies with the aim of expanding telecommunication and connectivity services beyond the level that would be attained by market forces alone.

For this reason, the topics of market liberalization, introduction of competition and universalization of telecommunication services have to be studied carefully as a way of dealing with the most dissimilar cases and in order to ensure that the solution applied to one issue does not adversely affect the others. However, the full range of opinions have to be taken into account when a decision is to be made.

Nor should it be forgotten that the need for measures to foster universal access to telecommunications is greater in less developed countries where resources are scarcer.

- c) Finally, and concurrently, major technological advances have been (and are still) taking place in the telecommunication field, giving rise to an overall situation totally different from the one that prevailed up to a few years ago.

In the first place, developments in such areas as optical fibre, signal digitization, compression techniques and wireless access have led to the gradual disappearance of what was previously considered a natural monopoly. This has strongly influenced the regulatory changes described.

Secondly, there has been a stream of new entrants previously involved in activities not in competition with telecommunication services, but which as a result of the new technologies are potential participants in the telecommunication market (cable video and electric power supply companies, etc.).

Finally, geographical areas and/or customers considered unprofitable with traditional technologies are in many cases becoming viable under the new alternatives, at competitive prices and/or tariffs.

Pradip Bhatnagar, who has acted as a WTO consultant, wrote an article entitled "Convergence and the World Trade Organization", which contains the following ideas on the universal service obligation:

Most economists advocate government intervention only when there is market failure. One instance is when intervention is for the achievement of social goals such as equity, especially when significant externalities arise through redistribution of resources. Here the fact that private benefit is less than social benefit means that market forces would fail and that the good/service will be under-provided in the absence of government intervention.

The justification for levying universal service obligations on telecommunications operators has traditionally been based on similar social grounds. Providing telephones to remote, inaccessible areas can result in far-reaching externalities to those residing there. However, owing to high fixed costs and low returns, there may be few takers for such a project unless the licensing authority makes it obligatory for the licensee to contribute in some material way.

*The emergence of a converged service such as **electronic commerce** has brought along with it the potential for small, micro-enterprises and individuals to participate in the global market. This makes universal service a potent tool for promoting competition and not merely social goals. Thus one significant development brought about by convergence is that universal service can be justified quite easily on economic grounds in view of the fact that equal opportunity Internet access can, by making market entry easy, maximize competition in an economy.*

David Trinkwon, in an October 1996 article on “Fixed Wireless Access” (Columbia Institute for Tele-Information, Columbia University) makes the following points:

*The ability of different **wireless technologies** to co-exist within a single geographical area, owned and operated by different service providers with relatively simple sharing arrangements for common infrastructure is one of the key aspects which makes wireless technologies a valuable addition to the universal service concept – in fact it can change the fundamental assumptions embodied within traditional approaches to universal service.*

2 Future significance of universal service, in particular the dynamic view of the concept and the question of new technologies

In order to determine the scope of universal service, it must be borne in mind that technological innovations substantially influence the achievement of universal service objectives, because they can transform previously unprofitable services into profitable ones. This is the case with the results obtained from the application of wireless and satellite technologies.

For this reason the concept must be *dynamic*, adaptable to the technological development of services, not just because technological developments make it possible to identify economically viable ways of dealing with many cases, but also because many service options acquire a *degree of necessity* for society, making them essential for the future, one example being the Internet. In other words, the concept must be dynamic, both to permit new, economically viable solutions and to satisfy future needs generated within society, in the short and the long term.

Once a definition of universal service has been formulated, *separate* consideration will have to be given to whether it can feasibly be achieved by the mere process of telecommunication liberalization and through competition, or through regulation involving some mandatory system of *subsidies* and *obligations* on licensees of telecommunication services. In other words, a clear distinction must be made between the *objective to be achieved* (through the conceptualization of what is meant by universal service) and the *means to be used* for its achievement.

As regards regulation in a competitive environment, special consideration should be given to the fact that any impairment of this neutrality prevailing among the different telecommunication service providers is harmful, while it is helpful to promote the use of technological advances which diminish the number of unprofitable areas within a specific country, without however reducing regulatory neutrality in respect of all the competing technologies available.

Accordingly, given the gradual trend towards increasingly competitive frameworks, the cross-subsidy mechanisms traditionally used to finance universal service, and still applied in some countries, must be replaced and adapted to the processes of telecommunication liberalization, taking care not to undermine the principle of neutrality, as defined in the World Trade Organization text cited in section 7 of this chapter. In connection with this evolutionary process, direct financing by the State should be the first option considered in the search for the best way of subsidizing universal service while respecting the principle of neutrality.

If this financing mechanism cannot be applied, then a method of subsidies generated by the telecommunication sector should be adopted, but they would have to be explicit with no cross-subsidization between services. A solution based on a special tariff on licensees of telecommunication services is not as equitable as the above-mentioned method, but is practical and easy to adopt.

Lastly, if none of these mechanisms were applied, universal service could be financed by means of cross-subsidization between services, provided that it is limited in duration and the choice of this option is adequately justified. To that end, the firms providing different telecommunication services would have to keep separate accounts for each of them.

Whatever method of financing universal service it is planned to introduce, it must meet the requirement of **not impairing** the competitiveness of **any** of the telecommunication service providers for the benefit of **any other**. Consequently, **it must not involve increases in access charges**.

3 Relationship with the level of development of the country concerned and results of the survey on the subject. Cases of monopoly, full competition and transition. Importance of the regulatory framework for achieving the universal service objective

Based on international experience, it is possible to affirm that no uniform criterion exists in respect of the type of telecommunication services to be included in universal service. The diversity of economic and geographic conditions, among other things, has given rise to different approaches on the scope of universal service.

Nevertheless, it can be asserted that, in overall terms, the universal service debate relates specifically to the satisfaction of the social telecommunication requirements determined by the State and the necessary means of funding.

Both the definition of universal service and the range of services it comprises are directly related to each country's level of development. Hence, consideration must be given to the fact that certain universal service definitions or concepts may be valid under specific market conditions and, conversely, inapplicable to other contexts or realities.

Moreover, it must be emphasized that competitive market conditions are found mainly in the developed countries, while in contrast most of the markets subject to conditions of monopoly are to be found in the least developed countries. Midway between these two extremes are the developing countries where privatization and liberalization of the telecommunication market are in the process of being implemented.

In this connection, and for the sake of a clearer analysis of the information studied, countries can conveniently be classified in three groups, as follows:

- developed;
- intermediate;
- developing.

3.1 Developed countries

This category will include such countries as the United States, those belonging to the European Union and others with similar income and telephone penetration levels.

According to the results of the survey carried out, the most common components of universal service in developed countries like the United States, the European Union, Canada, Switzerland, Malta, the Bahamas and Australia are the fixed telephone service (supporting low-speed data transmission) in each family unit and public telephones in all localities. It is generally agreed that the universal service concept is “dynamic” and constantly evolving.

The ultimate aim for these countries is a telephone for each family unit and a public payphone for every locality. Since extension of the service to all inhabitants is a distant goal, the need to find alternative ways of making access possible has been under consideration, basically involving access to a minimum rather than a full service. According to the evolution of the rate of overall penetration, other alternatives are also being studied using prepaid-type systems in order to make it easier for the beneficiaries of the service to manage their budgets.

The developed countries are characterized by a high level of telephone penetration, high income levels and, in many cases, high population density in specific cities. Moreover, in some countries discussion is under way on the inclusion of broadband services and the Internet in the universal service concept.

In this context, universal service is geared towards providing telephony for low-income groups, i.e. those unable to afford the full service tariffs at the prevailing rates. Similarly, the scope of universal service coverage includes remote and high-cost areas, and unprofitable public telephone lines.

Telecommunication competition is a feature of most of these countries. The opening of the markets to competition contributes to the achievement of "affordability" by causing tariffs to fall and more and better services to be offered.

In these cases, one of the regulator's main tasks is to maintain the neutrality of its decisions so as to prevent universal service from distorting competition by favouring some competitors at the expense of others.

The characteristics of this group of countries can best be described by reference to the United States, where the purpose of universal service is to promote the availability of high-quality telecommunication services at fair, affordable and reasonable rates. It must also guarantee access to advanced telecommunication services and information services for primary and secondary (public) schools, for (public) libraries and for health service providers.

To achieve this objective, universal service must contribute to making telecommunication services available to all consumers, including those belonging to the low-income category or living in rural, isolated and high-cost areas. In such areas, telecommunication service tariffs must be reasonably commensurate with those charged in urban areas.

The Federal Communications Commission (FCC) has the power to define universal service objectives and may periodically review the different component services, taking into account technological advances and the classification of services as essential for education, health or public safety. In its evaluation, FCC must also consider whether the majority of residential customers subscribe to the services, whether they are provided through public telecommunication networks and whether they can be considered to be in the public interest.

A further consideration is that each state may adopt regulations establishing additional definitions and standards in order to safeguard the progress of universal service in the state concerned. However, such regulations shall only be valid if specific, predictable and adequate mechanisms are adopted, which are not dependent on or burdensome to federal universal service subsidy mechanisms.

Another important example from this group is that of the European Union. Under the 1999 communications review, the regulatory framework in place is required to impose obligations on network operators in order to ensure that all citizens have access to a minimum set of services of specified quality, accessible to all users regardless of geographical location, and at an affordable price.

Universal service, as defined in current Community legislation, includes the provision of voice and fax telephony and the transmission of voice data by means of modems. The definition also comprises telephone exchange assistance, subscriber number information services, provision of public telephones and provision of special facilities for disabled customers or those with special social needs.

The definition of universal service adopted in the European Union is designed to avoid the emergence of a "digital divide" between those who have access to advanced telecommunication services and those who do not.

The Member States of the Union are at liberty, at the national level, to impose heavier obligations than those provided for in respect of universal service, but they cannot require operators to contribute to the provision of such services.

Community policy geared to deriving maximum benefit from the information society follows several main lines of approach. In particular, measures have been taken at Community and national level to improve school and university training so that users may take advantage of the existing technology.

In the context of the new regulatory framework, the Community has various policy instruments at its disposal for the achievement of this objective. The first is liberalization proper. Telecommunication liberalization has benefited consumers insofar as more reliable, better-quality and lower-cost services are now available. The proposals made in respect of licences, access, interconnection, etc. are directed to strengthening competition, leading in turn to more price discounts. It is acknowledged, however, that competition alone is insufficient to achieve the Community's policy objectives. It is claimed that there will be consumers with low incomes or living in remote areas who will not be reached by this service because it is uneconomical. It is therefore very important that the regulator should continue to guarantee the provision of all services considered essential.

3.2 Intermediate countries

The universal service objectives of countries with an intermediate level of development are similar to those of developed countries. The countries concerned include Argentina, Ecuador, Mexico, Tunisia, Fiji, the Islamic Republic of Iran, the Philippines, Malaysia, Korea and Sri Lanka, where universal service may be defined in general terms as the provision of fixed telephone service accessible in all regions at reasonable prices.

The various regulations in these countries place particular emphasis on low-income consumers, remote areas and unprofitable public telephony.

It should be pointed out that the level or target level of penetration will be linked to income levels in the national economy; indeed, there is empirical evidence of a very close correlation between GDP and teledensity. This does not imply a relationship of causality in one or other direction: it is equally conceivable that the level of development determines telephone and telecommunication service penetration or, conversely, that the growth of the communications sector is a prerequisite for economic development.

Seen from this standpoint, the universal service objectives – which in practice can in any case be adjusted over time – are initially similar to those prevailing in the developed world at the time of introduction of the concept of universal service obligations (USO), namely, offering accessible basic fixed telephony in all regions at affordable prices, taking into account the specific cases of low-income consumers, unprofitable public payphones and high-cost remote regions, whilst respecting the principle of competitive neutrality both in respect of universal service obligations and of their financing.

The scope of USO for these different categories – low-income consumers, high-cost areas or areas with unprofitable public payphones – must therefore be seen in terms of the anticipated economic growth prospects of each telecommunication system.

In these cases, since the countries concerned have in most cases started with obsolete State telephone networks, the privatization and/or liberalization processes undertaken may lead to the achievement of higher levels of penetration than could have been expected with the old technologies. Indeed, for the modernization of networks initiated by new (private) operators and/or in the new networks of providers which join forces in order to be competitive, cutting-edge technologies may be used to produce profitable outcomes in previously unprofitable situations.

Finally, bearing in mind that the main priority is to bring basic service up to the level referred to above, the countries at an intermediate stage of economic development have in some cases been able to begin adopting some of the objectives associated with the second stage of telecommunication development, such as Internet access in public schools. These objectives must be covered by special funds in order to bridge the divide which could block their progress towards the new information society in the developed countries.

3.3 Developing countries

Unlike other countries, those that are relatively less developed have to address the universal access concept in a context of lack of capital for investment. Hence, their objectives are initially limited to ensuring that the entire population has access to telephone service, i.e. a public service available in all urban centres and settlements, so that most inhabitants are able to make telephone calls.

The countries in this category include Belize, St. Vincent and the Grenadines, Suriname, Botswana, Eritrea, Gabon, Ghana, Kenya, Madagascar, Mali, Morocco, Mauritania, Chad, Tanzania, Zambia, Togo, Bhutan, Cambodia, Maldives and Pakistan, and others, with varying degrees of development.

Countries in this category do not all change their legislation at the same rate with regard to the definition of universal service obligations.

In countries with low telephone penetration, telecommunication services are usually operated by a monopoly (State or private) public operator; in sparsely populated or remote areas, telecommunications are provided on the basis of an agreement between the State and the operator and facilities are granted classifying the investments on the list of productive goods.

The situation of less developed countries differs clearly from that prevailing in countries with an intermediate and higher level of development, where resources for the financing of universal service objectives can reasonably be obtained by means of a general levy on telecommunication services. In developed countries, such a levy would represent only a small percentage, causing no significant distortions in the market. When the number of contributors (i.e. taxable users) is small, however, as is the case in countries at a lower overall level of development, any levy on tariffs or prices charged to the consumer would either be very high in percentage terms, thereby making the service unaffordable, or, if kept low, would bring in negligible revenue.

Both alternatives are wide of the mark. A very small levy is not worth the effort involved, while on the other hand a substantial price increase to raise a larger amount puts the natural growth of the market at risk by making the service unaffordable even to segments of society which would normally be able to use it.

As always, the theoretical solution would be to earmark the required expenditure for subsidies for the development of the various public utilities in the national budget. Thus, if the right to telecommunications constitutes a high social priority for a country, adequate provision should be made for USO costs in the same way as for other basic public utilities. Clearly, however, another obvious feature of relatively less developed countries is the frequent scarcity of budgetary resources derived from taxation with the result that the argument for meeting other basic requirements would probably take precedence over universal service objectives.

Before addressing the possible options for obtaining resources for subsidies when these cannot be taken from the sector itself or from general revenue, a general comment needs to be made about the conditions and possibilities for the provision of telecommunication services in relatively less developed countries.

First of all, even in relatively less developed countries, privately run services may produce better results than State-run services. Furthermore, the opening up of telecommunication markets to competition offers another possible means of ensuring lower tariffs and a bigger and better range of available services, this being an important factor in the development of the internal market.

New wireless technologies, particularly those that are satellite-based, have also produced excellent results in expanding services in relatively less developed countries, partly due to cost reductions achieved in recent years, but also in large measure because of the potential for new companies to surmount the administrative obstacles which often hamper the traditional basic service providers, and to overcome geographical difficulties such as access to remote locations. Another advantage of wireless systems is the speed and ease with which they are deployed, making it possible to provide rapid solutions for basic requirements. It must also be remembered that when minimum objectives have to be fulfilled, the cost of the technology can often be lower if the solution adopted fulfils the basic requirement alone, in comparison with other alternatives which might offer more facilities, but which also entail higher costs. In many African countries, for example, wireless local loop (WLL) systems have been successfully implemented and satellite solutions developed for television signal transmission and other services.

A telling example among LDCs is the case of Peru, an intermediate developing country, which last year decided to issue a call to bid for a basic telephone system for villages of under 500 inhabitants in remote localities in various regions of the country, the characteristics of which are such that their needs would be comparable to some of those encountered in less developed countries. The outcome of the project, which was open to bids from the private sector, was the adoption in the first round of bidding of a satellite solution providing the service at the general tariff, with zero subsidy. In two subsequent rounds, a subsidy of USD 5 000 to 9 500 per village was requested. This demonstrates that the combination of market solutions with new technologies is often sufficient in itself to find answers to the basic problems of universal service.

Nevertheless, it is clear that the definition of the objectives of universal service obligations for countries with a very low level of telecommunication development (i.e. penetration rates of less than 10%) should in the first instance be confined to accessibility, meaning a public service available in all towns or villages, so that all (or almost all) inhabitants are able to make a telephone call. Coverage should also be extended to schools, health-care centres and/or civic and community centres. Adopting of this option, i.e. limiting the scope of universal service obligations to access or a combination of the two, will ensure that they are met at an early stage; subsequently, achievement of the initial objective can be followed by further developments to extend the scope of universal service in future stages to be defined.

This category of countries calls for further specific studies in order to consider different levels of penetration under 10%, in particular those below 1%.

4 Costing and financing of universal service in different cases, in a monopoly situation and in a competitive market. Consideration of cases where there is more than one player. Geographical analysis

Costing and financing methods and mechanisms for universal access/service take different forms according to market conditions and the regulatory framework in each country.

Generally speaking, the reason why certain services would have to be subsidized is that they do not, with their own income, cover the costs to which they give rise. As mentioned above, the following are typical cases: low-income customers unable to afford the service at existing prices/tariffs, customers in remote or low teledensity regions with high operating and/or investment costs, uneconomic public telephones, and other specific cases (services for the disabled, for example).

The cost of universal service should as a rule be calculated as *the difference between the net operating costs of an operator, including universal service obligations, and those of an operator with no such obligations*. This is the concept of “avoidable cost” which was adopted at the meeting on Question 7/1 held in Buenos Aires in 1999. In all cases, costs must be audited and justified to the regulatory authority.

“The case of countries with low telephone density, with penetration levels below 1% (lines per total population) and very low income (defined as per capita GDP of less than USD 500), in which it is not possible to undertake tariff balancing in the short or medium term, must be regarded as an exception, so that tariffs can cover operating costs in order to eliminate the so-called ‘access deficit’. Only in these cases will it be necessary to consider another type of subsidies or input of funds in order to extend the accessibility of the service, without, however, ruling out the opening up of competition, ensuring that all active service providers on the market are treated equitably and without discrimination in terms of their contribution to defraying the cost of universal service. In developing countries where penetration levels are higher and where there is no need for subsidies (for all or most users) by means of tariffs that are lower than costs, the rebalancing of local tariffs must be undertaken promptly if it has not already been done, so that tariffs are cost-orientated, considering subsidies (if necessary) for low-income consumers who are in great need of the service but have no access to it, including alternative forms such as local public telephony, pre-paid lines, low-cost lines for emergency calls, etc.”

The *net* cost of providing universal access/service should in principle be calculated as follows:

- *avoidable service costs without universal access/service*
- **minus** *revenue received for such services*
- **EQUALS NET DIRECT COST**
- **minus** *value of any indirect profit derived from universal access/service obligations*
- **EQUALS TOTAL NET COST.**

The calculation should include all direct and indirect costs of functions, elements, facilities and assets required for the provision of universal service, taking into account the direct and indirect profits earned by the provider from the provision of the service.

Objective methods of calculation should be used in all cases, in order to avoid consideration on the basis of unverifiable assumptions. Costing may be based on the service provider’s commercial accounts, with due allowance for possible past inefficiencies, and including a factor for technological change up to the present day.

Adoption of the “avoidable cost” method tends to prevent any compensation for costs incurred in the provision of universal service from entailing an unfair advantage for service providers in relation to their competitors. This is particularly important under conditions of genuine competition among various operators, at least one of which has universal access/service obligations.

However, in the case of countries with low telephone density, within the previously stated limits, the points mentioned above apply.

Externalities are difficult to measure and, since they have to be estimated with care in order to rule out arbitrary considerations, not only are they frequently still not used in the above method of calculation, but no analytical evaluation of them has been undertaken.

Once the means of calculating the costs of universal access/service provision have been determined, it has to be accepted that the most efficient theoretical financing mechanism is one based on specific budgetary appropriations earmarked directly from tax revenue. This is the most appropriate mechanism because it is competition-neutral. However, the practical difficulties of achieving this objective at the international level are well known, particularly in the case of relatively less developed or developing countries.

Under any of the scenarios, regulation must not promote the establishment of cross-subsidy mechanisms because they distort competition. For this reason, alternative mechanisms must be studied and developed, such as the establishment of a levy on telecommunication sector net income.

The financing of universal service through international cooperation may also produce positive results, especially for relatively less developed countries, either on the basis of an accounting rate scheme that takes account of their situation, or through the intervention of international finance agencies.

By way of example, it should be mentioned that some countries in the Americas, Africa and Asia have established a system of universal service financing based on a percentage of the returns earned by operators in the market, while others have implemented government subsidies as a source of financing for universal access/service.

In the European Union, each Member State establishes its own universal service financing methods, with the objective of compensating the universal service operator when the imposition of the universal service obligation is considered to constitute an unfair burden for that operator.

With regard to where the burden of contribution to universal service should fall, it should be noted that all operators of inter-state telecommunication services in the United States are required to contribute to universal service, at a level proportional to the volume of their activities.

In the countries of the Americas, there is observed to be a marked tendency to require all telecommunication service operators to contribute to universal access/service.

This is also the approach adopted by most African countries and by the Asian and Asia-Pacific countries.

Lastly, it should be noted that some countries already operate a universal access/service fund and others intend to establish one.

In those countries where a universal access/service fund has been established, it is usually stipulated that the fund is to be administered and managed by the telecommunication regulatory body.

A further alternative method of costing universal access/service is to award contracts in respect of the obligations concerned by means of auctions or competitive bidding. The only drawback – which the regulator has to anticipate – arises when such auctions are unproductive, i.e. when no one is prepared to offer the service put up for auction. When the method is successful, that is to say when there are bidders who are awarded the right to provide services in accordance with the universal access/service obligation concerned, the resulting cost is not only uncontroversial but may be assumed, in principle, to be the correct cost. This method has been applied with varying degrees of success in different locations.

5 Obligations of service providers, analysis of the different systems identified, obligation of the incumbent provider, play or pay system, etc. Particular reference to the last-resort service provider

In most countries, both developed and developing, the main obligation to fulfil universal service obligations lies with the dominant operator which in some cases enjoys an operating monopoly. However, in some of the countries that have opened up the telecommunication market to competition, the universal access/service obligation is borne by all operators. In certain countries, universal access/service obligations are also applicable to cellular operators and operators of satellite services. This is illustrated by an analysis of the situation in the countries of the Americas, Africa, Asia and those of the Asia-Pacific region.

As regards the scope of universal access/service obligations, they are usually aimed at extending the service and increasing telephone penetration, irrespective of the country's level of development.

It should also be mentioned that, while universal access/service obligations in most cases include the extension of the service to rural areas, some countries include provision of services to rural hospitals, health centres, rural schools and services for customers with special needs.

In some of the relatively more developed countries, the telephone directory, emergency call and operator assistance services are also included in the scope of the obligations of service providers responsible for universal access/service.

On the other hand, in countries with a lower level of development, the scope is restricted, in the early stages, to the provision of public telephones throughout the country.

It is important to note that an increasing number of countries are introducing the so-called play or pay mechanism as an alternative means of contributing to the cost of providing universal access/service on the part of operators. In other words, every telecommunication service provider has the option of participating in the provision of services included in the universal access/service obligation, instead of contributing to the fund set up for its financing.

Finally, it should be pointed out that, under both the play or pay and the auction method, when no interest is expressed in providing all (or part) of the services, the party that is to be responsible for the relevant obligations must be identified in advance and is known as the "last-resort" service provider. The party which bears this responsibility is usually the incumbent provider.

6 Summary of costing, deficit measurement and financing methods for the universal service obligation

Determining what method to use for costing the universal access/service obligation is not only a complex matter, but also a controversial one, and anyway there is no single ultimate solution to cover all cases. Indeed, as aptly captured in the report on the situation in the Americas, "*different regulatory frameworks and different economic, social and political situations coexist, and this has a bearing on the adoption of a single definitive financing and costing model*". To date, according to the case at issue, there is support for two costing options: "historical costs" and "long-run incremental costs" (LRIC). There is no doubt whatsoever that countries' different macroeconomic situations affect the amortization periods of their infrastructures and thus it is not always possible to envisage a universal solution in this regard.

Nevertheless, in principle and introduced gradually, the long-run incremental cost method appears to be the most advisable costing method for universal access/service, always bearing in mind however the context of the country in which it is to be applied.

Adopting the long-run incremental approach in a competitive environment implies that costs will be calculated from a long-run perspective at current consumer prices, including a reasonable rate of return consistent with the competitive capital market.

It should also be noted that the long-run incremental cost approach has been adopted in the United States and the European Union for the purposes of costing interconnection and universal service obligations.

In respect of universal service, the incremental cost is the cost incurred as a result of the universal access/service obligations, or the avoidable cost if those obligations were withdrawn and the provider could curtail provision of the service, from a long-run perspective.

Costing universal access/service must be based on analytical models that reflect the operating costs of the network, identifying each of the elements or services it comprises. Costs may be calculated on the basis of the service provider's commercial accounts, although it has to be borne in mind that historical costs need to be adjusted by applying factors to take account of possible past inefficiencies in the company. Furthermore, a detailed analysis needs to be made of the allocation of joint and common direct and indirect costs corresponding to the service in question.

Establishing criteria in order to determine the costs of providing a service is a far from simple task, considering that not all service providers have implemented cost accounting capable of supplying sufficient information and, in many cases, do not have data capable of explaining the costs in relation to the causation. For this reason, it is necessary to clarify a number of conceptual and methodological questions, in particular in respect of the cost models to be used.

The "*Liaison statement to ITU-D Study Group 1 on cost methodologies*" from Working Party 2/3 of ITU-T Study Group 3, which addresses various issues related to the appropriate costing method, as well as the two different schools of thought in favour of using fully distributed costs (FDC) and incremental costs (IC), respectively, highlights among other things the suitability of IC for setting prices in competitive markets. It also states that "*FDC could come close to IC provided criteria are being applied like cost causality, valuation of assets at current prices, activity based costing (ABC) for costs of operations, maintenance and the like*".

Generally speaking, the document acknowledges that the developing countries ("*D countries*") tend to favour FDC, whereas the doctrine in industrialized countries ("*I countries*") is more inclined towards the IC approach due to its greater suitability for competitive markets.

Another issue addressed in the liaison statement is historical (HCA) versus current (CCA) cost accounting. It states that "*HCA was often associated with FDC and CCA with LRIC*" and goes on to point to the general agreement that "*it should be the aim of every telecommunication operator to provide its services in an efficient way and that in a long-run perspective the corresponding concept of efficient service provision should be the suitable one in pricing decisions. This concept coincides with the costing*

standard of forward-looking long-run incremental cost which means that costs are derived under the requirement that the operator uses the latest technology and is efficiently organized. There was disagreement as to the question in which time horizon this efficiency requirement should be fulfilled”.

In this connection, it is important to note that the further statement that “*there is a need for further discussions of the requirements themselves to be fulfilled by costing approaches. Discussions should be aimed at reaching a consensus on what the minimum set of these requirements should be. There is also the need to analyse how the specifics of the different regions are to be reflected in the models, taking into account in particular practicability aspects”.*

At the same time, it is stated in draft Annex E to ITU-T Recommendation D.140 (*Guidelines for bilateral negotiations of transitional arrangements towards cost-orientation, 1999-2001*), reproduced in Document 1/86 of ITU-D Study Group 1 on Question 12/1 (*Tariff policies, tariff models and methods of determining the cost of national telecommunication services*), with respect to universal service obligations, that “*any Member State has the right to define the kind of universal service obligation it wishes to maintain. However, such obligations should be administered in a transparent non-discriminatory and competitively neutral manner which is not more burdensome than necessary for the kind of universal service defined by the Member”.*

In calculating the potential deficit to be subsidized, all income derived by the provider from the provision of universal access/service must be included. Of course, beyond the specific costing method (historical or long-run incremental) used, we may again repeat what has already been said, namely that the process is based on the concept of “avoidable cost” already mentioned. It is on this basis that the potential deficit is evaluated.

It is important to highlight that, while the analysis of costing methods has to envisage all the situations involved in order to determine the most suitable method for any particular case, there can be no legitimate grounds for measures to sustain a given proportion of private companies which are unable (or unwilling) to face competition, since this is not in the public interest.

In all this, it has to be remembered that the social effect of competition and of the regulatory framework is precisely to bring down prices, so that the only legitimate way of maintaining income at prior levels is to expand service or increase the number of customers. Competition is beneficial to the users, and obstructing it (when this is feasible) by introducing regulatory surcharges is clearly anti-social and there are no legitimate grounds for supporting or requesting such action.

Last but not least, it must be kept in mind, that, as is well known, in many developing countries where the number of incoming calls exceeds the number of outgoing calls, “call termination” has represented a source of external income, even though the country’s own policy of applying high accounting rates makes the service expensive for local consumers. In recent years, the international trend has been towards lower accounting rates. Although this reduction in accounting rates poses problems for countries with relatively less-developed economies, compounded by the low volume of local income from services which are poorly developed, most emerging countries are already facing this new reality with a new attitude and accepting that this source of subsidy is on the wane.

The need for new types and sources of financing for the economies of less developed countries was discussed and is addressed in Annex 2.

No contributions were received on the issues of income from economic externalities and the application of a trigger clause.

7 Conclusions

In conclusion, the validity of the universal service concept is reaffirmed as one of the fundamental human rights within the objective framework of the United Nations.

In the environment shaped by today's economic realities, proper regulation of universal service should not jeopardize the different forms of competition and should be competitor-neutral and technology-neutral. It should also be borne in mind that competition in itself is not, as a rule, sufficient to achieve universal service goals, notwithstanding the benefits such competition may have produced in each specific economy.

The principle of neutrality is considered to be adequately defined by the World Trade Organization in the following passage: "Any Member has the right to define the kind of universal service obligation it wishes to maintain. Such obligations will not be regarded as anti-competitive *per se*, provided they are administered in a transparent, non-discriminatory and competitively neutral manner and are not more burdensome than necessary for the kind of universal service defined by the Member."

There has to be a clear and concrete idea of what is meant by ***universal service in a competitive context***, given the evidence of substantial differences in economic development among the different countries. The definition of the universal service concept will therefore have to take account of not only the differences in countries' economic potential, but also the real possibility of there being various competing players.

The definition should also take account of the obvious problem of ***greater necessity*** versus ***fewer resources***: we must not disregard the fact that the need for telecommunication development is greatest where average per capita incomes are lowest.

In other words, ***reasonable telephone penetration*** for residential subscribers is the minimum requirement, with the additional requirement of ***adequate availability of public telephones*** for sparsely populated localities and/or areas.

Provision must also be made for the existence of ***alternatives to disconnection of services on account of unpaid bills***, in order to reduce the number of people who, temporarily or otherwise, are left without service because of their inability to pay their bills. Consideration should also be given to including those ***sectors of society whose characteristics are deemed to make it advisable or necessary*** to set special prices and/or tariffs, such as in the case of pensioners with incomes below a certain level and the disabled.

On the basis of these guidelines and pending the elaboration of official ITU definitions, the ones adopted are those contained in BDT's 1998 World Telecommunication Development Report, as follows:

- **UNIVERSAL ACCESS**: reasonable access to telecommunications for all, including ***universal service*** for those who can afford the individual telephone service and the installation of public telephones within a reasonable distance for the rest of the population.
- **UNIVERSAL SERVICE**: ***availability***, non-discriminatory ***access*** and general ***affordability*** of the telephone service, the level of universal service being statistically measured in terms of the percentage of households with a telephone.
- **ACCESSIBILITY**: (in the broad sense) universal service principle under which no telephone service subscriber is to be discriminated against in terms of price, service or quality for reasons of geographical location, race, sex, religion, etc.
- **AFFORDABILITY**: universal service principle whereby telephone service charges are set at a level that most citizens can afford.
- **AVAILABILITY**: universal service principle whereby telephone service coverage is provided nationwide, wherever and whenever required.

ANNEX 1

Analysis of the answers to the questionnaire on Universal Service

Country	Definition of Universal Service and/or Universal Access (US/UA)	US Obligation	If an operator does not have USO, is the operator obliged to contribute to the cost borne by another operator?	Do telecom operators have a choice of extending service to unserved customers or contribute to the cost borne by the dominant operators?	What does the USO include?	Is USO a condition to obtain a licence?	GDP per capita (World Bank)	Teledensity (ITU – 1998) mainlines/ 100 people
Africa								
Botswana	N.A.	Yes. • Dominant operator. • All telecom operators. • Cellular radio operators.	No	Yes	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. 	Yes	3600	6.5
Chad	Service that provide to all the inhabitants of the national territory a minimum service of telecommunications of quality to an affordable price.	Yes • Dominant telecom operator. • All telecom operators. • Cellular radio operators.	N.A.	N.A.	N.A.	Yes	230	0.1
Eritrea	To guarantee the citizens a growing access to the telecommunications.	Yes • Dominant telecom operator.	Yes	Yes	<ul style="list-style-type: none"> • Extending services to rural areas. 	Yes	200	0.7
Gabon	To provide basic tele-communication services to people that request them at an affordable price and determined quality of provision.	Yes • Dominant telecom operator. • All telecom operators.	Yes	Yes	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres. 	No	4300	3.3
Ghana	No	No	No	No	<ul style="list-style-type: none"> • Extending services to rural areas. 	No	390	0.8
Kenya	Provision of telecommunication services in form of pay phones, telecentres, etc. for use within a walking distance of no more than five (5) kilometres.	Yes • Dominant telecom operator. • All telecom operators. • Cellular radio operators. • Satellite service providers.	N.A.	No	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. 	Yes	330	0.9

Analysis of the answers to the questionnaire on Universal Service (cont.)

Country	Definition of Universal Service and/or Universal Access (US/UA)	US Obligation	If an operator does not have USO, is the operator obliged to contribute to the cost borne by another operator?	Do telecom operators have a choice of extending service to unserved customers or contribute to the cost borne by the dominant operators?	What does the USO include?	Is USO a condition to obtain a licence?	GDP per capita (World Bank)	Teledensity (ITU – 1998) mainlines/ 100 people
Africa (cont.)								
Madagascar	Provision of telephony services to everybody at an affordable price.	Yes • All telecom operators.	–	No	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision fo services to rural hospitals or health care centres. 	Yes	260	0.3
Mali	To offer telecommu-nications services to the maximum number possible of users in the whole national territory, assuring good quality and affordable prices, and guaranteeing the profitability.	Yes • Dominant telecom operator.	–	–	<ul style="list-style-type: none"> • Extending services to rural areas. 		250	0.3
Mauritania	Access to the telecommu-nications services for all under reasonable conditions, facilitating a payment to those that can pay it and installing for the other ones an enough number of tele-centres or community centres.	Yes • Dominant telecom operator. • All telecom operators. • Cellular radio operators.	Yes	Yes	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres. 	Yes	410	0.6
Morocco	Setting to disposition of all of a minimum telephone service of quality to an affordable price, giving course to the emergency calls, provision of information services, and of guide and installation of booths in the whole national territory respecting the principles of equality, continuity, universality and adaptability.	Yes • All telecom operators.	Yes	No	The covering of the whole territory.	Yes	1 260	5.4

Analysis of the answers to the questionnaire on Universal Service (cont.)

Country	Definition of Universal Service and/or Universal Access (US/UA)	US Obligation	If an operator does not have USO, is the operator obliged to contribute to the cost borne by another operator?	Do telecom operators have a choice of extending service to unserved customers or contribute to the cost borne by the dominant operators?	What does the USO include?	Is USO a condition to obtain a licence?	GDP per capita (World Bank)	Teledensity (ITU – 1998) mainlines/100 people
Africa (cont.)								
Niger	Access to the telecommunications services for all under reasonable conditions, facilitating a payment to those that can pay it and installing for the other ones an enough number of telecentres or community centres.	Yes <ul style="list-style-type: none"> • Dominant telecom operator. • All telecom operators. • Cellular radio operators. 	N.A.	Yes	<ul style="list-style-type: none"> • Extending services to rural areas. 	Yes	190	0.2
Tanzania	No	Yes <ul style="list-style-type: none"> • Dominant telecom operator. • Cellular radio operators. 	It will be decided when the modalities of creation of the fund are defined.	Yes, but the contribution to the expense will be determined when the rural fund is settled.	<ul style="list-style-type: none"> • Extending services to rural areas. 	Yes	210	0.4
Togo	Minimum offer of telecommunications service focused to all in the whole national territory to an affordable price, respecting the principles of equality and universality.	Yes <ul style="list-style-type: none"> • Dominant telecom operator. • All telecom operators. • Cellular radio operators. • Satellite service providers. 	This aspect is not contemplated in the laws.	Yes	<ul style="list-style-type: none"> • Extending services to rural areas. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres. 	No	330	0.7
Tunisia	No	No	–	–	Any obligation of universal service.	–	2 110	8.1
Middel America								
Bahamas	Making certain basic telecommunications services available at an affordable price to all people throughout the Bahamas.	Yes <ul style="list-style-type: none"> • Dominant telecom operator. 	No	N.A.	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision of services to rural schools. • Provisions of services to rural hospitals or health care centres. 	Yes	12 700	

Analysis of the answers to the questionnaire on Universal Service (cont.)

Country	Definition of Universal Service and/or Universal Access (US/UA)	US Obligation	If an operator does not have USO, is the operator obliged to contribute to the cost borne by another operator?	Do telecom operators have a choice of extending service to unserved customers or contribute to the cost borne by the dominant operators?	What does the USO include?	Is USO a condition to obtain a licence?	GDP per capita (World Bank)	Teledensity (ITU – 1998) mainlines/100 people
Middel America (end)								
Belize	Access to basic telephony at affordable rates.	Yes <ul style="list-style-type: none"> • Dominant telecom operator. • Others: in partnership with the government, government subsidy. 	Yes	Yes	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres. 	Yes	2 700	
Panama	No	Yes <ul style="list-style-type: none"> • Dominant telecom operator. 	No	No	<ul style="list-style-type: none"> • Extending services to rural areas. 	Yes	3 080	15.1
St. Vincent and Grenadines	No	Yes <ul style="list-style-type: none"> • Dominant telecom operator. 	–	–	–	–	2 560	15.1
South America								
Argentina	Mechanism to promote that the whole population has access to the communications services, taking into account regional inequalities, level of salaries, and inhabitants' physical impediments. It is a dynamic concept that should revise periodically	Yes <ul style="list-style-type: none"> • Dominant telecom operator. 	Yes	No All the operators contribute to the US fund, and those that provide it will perceive a compensation for the deficit that exists.	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres. 	No	8 970	20.3
Ecuador	No	No	No	No	–	No	1 530	7.8
Suriname	No	Yes <ul style="list-style-type: none"> • Dominant telecom operator. 	N.A.	Yes	<ul style="list-style-type: none"> • Extending services to rural areas. 	Yes		
Asia								
Bhutan	No	Yes <ul style="list-style-type: none"> • Dominant telecom operator. 	No Bhutan has one operator who has to provide services throughout the country.	–	<ul style="list-style-type: none"> • Extending services to rural areas. 	No	430	
Cambodia	Currently none. It will be introduced in the new legislation.	Yes <ul style="list-style-type: none"> • All telecom operators, but even not implemented. 	Yes	No	<ul style="list-style-type: none"> • Extending services to rural areas. 	No	300	0.2

Analysis of the answers to the questionnaire on Universal Service (cont.)

Country	Definition of Universal Service and/or Universal Access (US/UA)	US Obligation	If an operator does not have USO, is the operator obliged to contribute to the cost borne by another operator?	Do telecom operators have a choice of extending service to unserved customers or contribute to the cost borne by the dominant operators?	What does the USO include?	Is USO a condition to obtain a licence?	GDP per capita (World Bank)	Teledensity (ITU – 1998) mainlines/ 100 people
Asia (cont.)								
Islamic Republic of Iran	Providing telephone services to all villages with more than 100 population.	Yes • Dominant telecom operator.	No	Yes	• Extending services to rural areas.	No	1 780	11.2
Republic of Korea	Basic telecommunication services which are provided to everybody with an affordable price anywhere in the country.	Yes • Dominant telecom operator.	Yes	Yes	• Extending services to rural areas. • Providing services to disadvantaged citizens.	No	10 550	43.3
Kuwait	Basic telephony service.	Yes • Dominant telecom operator. • All telecom operators. • Cellular radio operators. • Satellite service providers.	No	No	Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres.	Yes	20 190	23.6
Lebanon	Currently none. It will be introduced in the new legislation	Yes • Dominant telecom operator. • Cellular radio operators.	No	Yes	• Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres.	Yes	3 350	19.4
Malaysia	A system to promote the widespread availability and usage of network services or application services throughout Malaysia by encouraging the installation of network facilities and the provision for network services and/or application services in underserved areas or for underserved groups within the community.	Yes • Dominant telecom operator. • Cellular radio operators.	No	Yes	• Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres.	Yes	4 530	19.8

Analysis of the answers to the questionnaire on Universal Service (cont.)

Country	Definition of Universal Service and/or Universal Access (US/UA)	US Obligation	If an operator does not have USO, is the operator obliged to contribute to the cost borne by another operator?	Do telecom operators have a choice of extending service to unserved customers or contribute to the cost borne by the dominant operators?	What does the USO include?	Is USO a condition to obtain a licence?	GDP per capita (World Bank)	Teledensity (ITU – 1998) mainlines/ 100 people
Asia (end)								
Maldives	Provide at least a connection to all inhabited islands.	Yes • Monopoly operator.	N.A.	Yes	• To give access to all inhabited islands.	Yes	1 170	
Pakistan	A minimum set of services of specified quality which is available to all users independent of their geographical location at an affordable price.	Yes • Dominant telecom operator. • All telecom operators. • Cellular radio operators. • Satellite service providers. • Card payphone operators	No	No	• Extending services to rural areas. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres.	No	480	1.9
Philippines	Universal Access is the availability in all urban and rural areas of a minimum set of telecommunication services which are reliable and affordable.	Yes • Dominant telecom operator. • Cellular radio operators.	Yes	Yes	• Extending services to rural areas. • Providing services to disadvantaged citizens.	Yes	1 056	3.7
Sri Lanka	Easy access to basic telecommunication facilities to all at affordable and reasonable prices.	Yes • The Government of Sri Lanka.	No	No	• Extending services to rural areas.	No	799	2.8
United Arab Emirates	N.A.	Yes • Dominant telecom operator.	N.A.	No	• Extending services to rural areas.	No	17 003	38.9
Europe								
Belarus	No	Yes • Dominant telecom operator	No	No	• Extending services to rural areas. • Providing services to disadvantaged citizens. • Other: increase of number of main telephone lines.	No	2 200	24.1
Bulgaria	A service with a determined quality of provision accessible to any user, regardless of his geographical location and offered at an affordable price. A USO is the ordinary voice telephony service, provided via the fixed telephony network.	Yes • Dominant telecom operator.	No	No	• Extending services to rural areas. • Providing services to disadvantaged citizens.	No	1 230	32.9

Analysis of the answers to the questionnaire on Universal Service (cont.)

Country	Definition of Universal Service and/or Universal Access (US/UA)	US Obligation	If an operator does not have USO, is the operator obliged to contribute to the cost borne by another operator?	Do telecom operators have a choice of extending service to unserved customers or contribute to the cost borne by the dominant operators?	What does the USO include?	Is USO a condition to obtain a licence?	GDP per capita (World Bank)	Teledensity (ITU – 1998) mainlines/100 people
Europe (cont.)								
Finland	No	No	No	No	–	No	23 100	55.4
France	A service which is provided to everybody with an affordable price and determined quality of provision.	Yes <ul style="list-style-type: none"> • Dominant telecom operator. 	Yes	No	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres. 	Yes	23 800	57.0
Hungary	No In accordance with the European Union, the service qualified as universal must be available to all everywhere and their prices must be acceptable and affordable.	No	No	No	–	No	4 510	33.6
Latvia	Specified minimal volume of telecommunications services at a quality level in conformity with existing standards, which is accessible to all existing and potential telecommunications service users.	No	No	No	–	No	2 430	30.2

Analysis of the answers to the questionnaire on Universal Service (cont.)

Country	Definition of Universal Service and/or Universal Access (US/UA)	US Obligation	If an operator does not have USO, is the operator obliged to contribute to the cost borne by another operator?	Do telecom operators have a choice of extending service to unserved customers or contribute to the cost borne by the dominant operators?	What does the USO include?	Is USO a condition to obtain a licence?	GDP per capita (World Bank)	Teledensity (ITU – 1998) mainlines/ 100 people
Europe (cont.)								
Malta	USO means are obligations to provide telecommunications services that are designated by the Regulator as basic services for social reasons at an affordable price or free of charge.	Yes <ul style="list-style-type: none"> • Dominant telecom operator. • All telecom operators. • Cellular radio operators. 	Yes	No	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres. • Other: basic service, remote care services, operator-assisted services, fault reporting services, emergency services, maritime communication services. 	No	8 800	
Poland	No	No	No	No	–	No	3 900	22.8
Portugal	The set of specific duties inherent to the provision of addressed public use telecommunication services, aiming at meeting the telecommunication needs of the population and economic and social activities in all the national territory, in an equitable and continuous manner and through appropriate remuneration conditions, bearing in mind the demands of a harmonic and balanced economic and social development.	Yes <ul style="list-style-type: none"> • Dominant telecom operator. 	Yes	No	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. 	No	10 250	41.3

Analysis of the answers to the questionnaire on Universal Service (*cont.*)

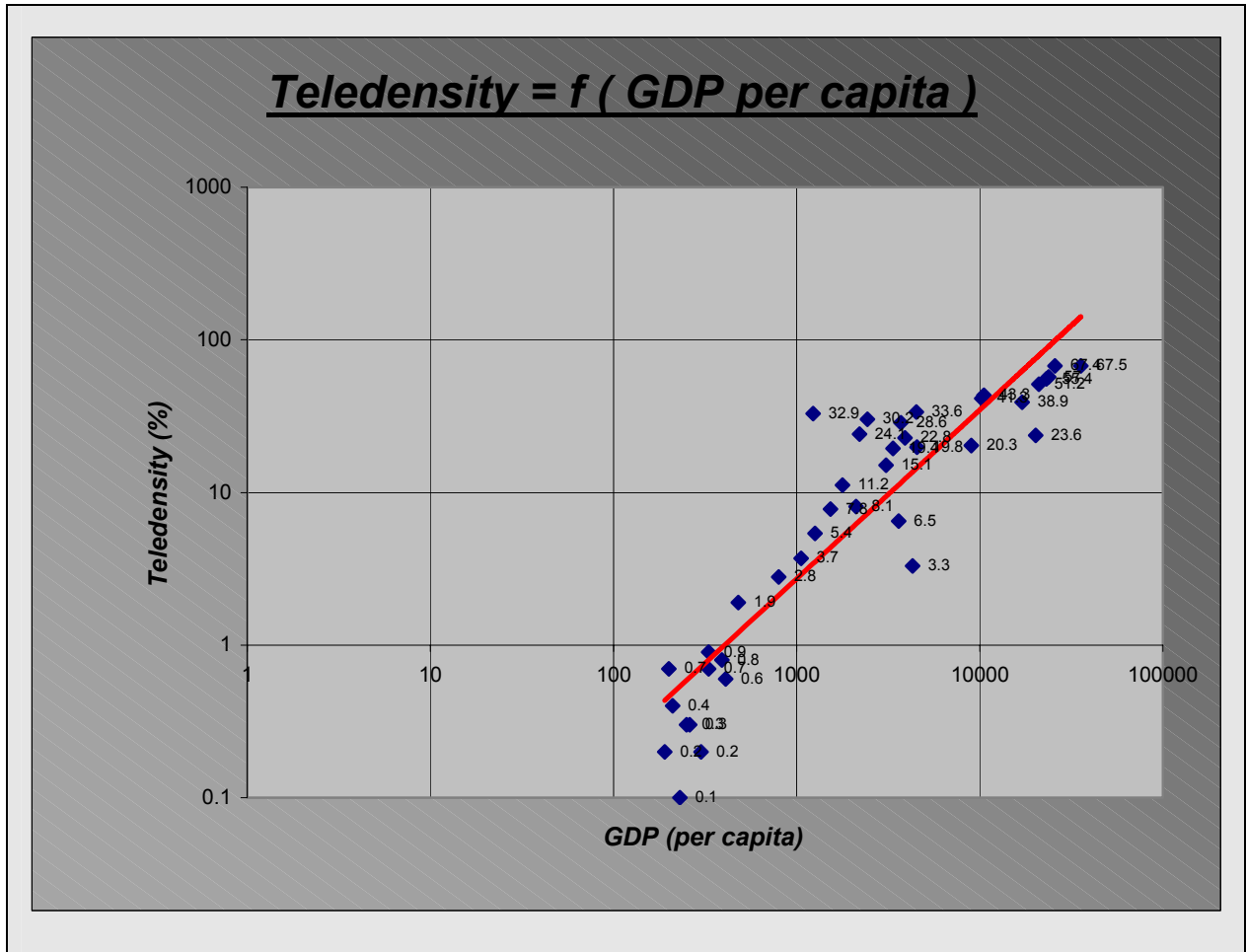
Country	Definition of Universal Service and/or Universal Access (US/UA)	US Obligation	If an operator does not have USO, is the operator obliged to contribute to the cost borne by another operator?	Do telecom operators have a choice of extending service to unserved customers or contribute to the cost borne by the dominant operators?	What does the USO include?	Is USO a condition to obtain a licence?	GDP per capita (World Bank)	Teledensity (ITU – 1998) mainlines/ 100 people
Europe (<i>fin</i>)								
Slovak Republic	No, in the currently valid legislation. New Telecom Law is expected to enter shortly.	No The draft of new Telecom Law will impose USO upon the dominant telecom operator.	In accordance with the draft of new Telecom Law, the Telecommunication Office (NRA) will impose a duty to contribute to the universal service provider on all other public telecom networks operators.	No	In accordance with the draft of new Telecom Law, USO will include. <ul style="list-style-type: none"> • Providing services to disadvantaged citizens. 	No It will be one of the conditions of the new licence for Slovak Telecom, which is being prepared in accordance with the draft of new Telecom Law.	3 700	28.6
Sweden	Telecommunication services which consist of speech transmission and which permit transmission of telefax messages and data communication via low-speed modems.	Yes <ul style="list-style-type: none"> • Dominant telecom operator. 	No	No	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres. • Other: everyone shall be able to use, at his/ her permanent place of residence or regular business location at an affordable price, telephony services within a public telecommunications network. 	No	25 700	67.4
Switzerland	Yes	Yes <ul style="list-style-type: none"> • Dominant telecom operator (for 5 years). 	No	No	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres. 	No	35 600	67.5

Analysis of the answers to the questionnaire on Universal Service (*fin*)

Country	Definition of Universal Service and/or Universal Access (US/UA)	US Obligation	If an operator does not have USO, is the operator obliged to contribute to the cost borne by another operator?	Do telecom operators have a choice of extending service to unserved customers or contribute to the cost borne by the dominant operators?	What does the USO include?	Is USO a condition to obtain a licence?	GDP per capita (World Bank)	Teledensity (ITU – 1998) mainlines/100 people
Oceania								
Australia	Provision of: <ul style="list-style-type: none"> • Standard voice grade telephone service on demand to all Australians. • Reasonable access to payphones to all Australians. • A range of disability-related equipment. • Access to a relay service for the hearing impaired. • Access to digital data service (equivalent to ISDN) to all Australians on demand. 	Yes <ul style="list-style-type: none"> • Dominant telecom operator. USO is currently imposed on the dominant telecom operator, but it may be legally imposed on any carrier. The Government is considering practical ways of allowing carriers other than the dominant operator to compete for access to subsidies from the USO fund.	Yes	No	<ul style="list-style-type: none"> • Extending services to rural areas. • Providing services to disadvantaged citizens. • Provision of services to rural schools. • Provision of services to rural hospitals or health care centres. 	No	21 000	51.2
Fiji	No	No	No	N.A.	<ul style="list-style-type: none"> • Extending services to rural areas 	No	2 460	

Teledensity

	Country	GDP per capita	Teledensity
Africa	Chad	230	0.1
Africa	Niger	190	0.2
Asia	Cambodia	300	0.2
Africa	Madagascar	260	0.3
Africa	Mali	250	0.3
Africa	Tanzania	210	0.4
Africa	Mauritania	410	0.6
Africa	Eritrea	200	0.7
Africa	Togo	330	0.7
Africa	Ghana	390	0.8
Africa	Kenya	330	0.9
Asia	Pakistan	480	1.9
Asia	Sri Lanka	799	2.8
Africa	Gabon	4 300	3.3
Asia	Philippines	1 056	3.7
Africa	Morocco	1 260	5.4
Africa	Botswana	3 600	6.5
South America	Ecuador	1 530	7.8
Africa	Tunisia	2 110	8.1
Asia	Islamic Republic of Iran	1 780	11.2
Middle America	Panama	3 080	15.1
Asia	Lebanon	3 350	19.4
Asia	Malaysia	4 530	19.8
South America	Argentina	8 970	20.3
Europe	Poland	3 900	22.8
Asia	Kuwait	20 190	23.6
Europe	Belarus	2 200	24.1
Europe	Slovak Republic	3 700	28.6
Europe	Latvia	2 430	30.2
Europe	Bulgaria	1 230	32.9
Europe	Hungary	4 510	33.6
Asia	United Arab Emirates	17 003	38.9
Europe	Portugal	10 250	41.3
Asia	Republic of Korea	10 550	43.3
Oceania	Australia	21 000	51.2
Europe	Finland	23 100	55.4
Europe	France	23 800	57
Europe	Sweden	25 700	67.4



ANNEX 2

**Policies and Programmes for the Development
of Universal Service in the Developing Countries**

“Neither in the name of common humanity nor on grounds of common interest is such a disparity acceptable.”¹

Abstract

In the present global system there is a visible disparity in the development of networking technologies² between developed and developing countries. In this paper we will seek to show the possibilities and means at the disposal of the developing countries to bridge this gap and assist their economic development. We will explain how a proper combination of national and supranational policies and aid programmes can enable many countries to move from a situation in which they are passed over to one in which they are beneficiaries. It should be pointed out that it is of the utmost importance to give network development a high priority in the hierarchy of development objectives, and that there are various sources of international, bilateral and multilateral funding.

Introduction

There is clear agreement in the literature on telecommunications that advances in networking contribute to the development of the information society and that this in turn will promote future economic growth by means of increased productivity.³ Moreover, the 2000/2001 World Bank Report points to a new vision of poverty, where the term refers not only to low income and low consumption but also to lack of education, malnutrition, deficient health policies and, the Bank adds, lack of power, “lack of communication”, vulnerability and fear.

¹ Quoted in Document 14-E (11 December 1997) of the ITU World Telecommunication Development Conference (WTDC-98), Malta. The quotation is taken from the “Missing Link”, the December 1984 report of the Independent Commission for Worldwide Telecommunications Development.

² The term “networking” is used in preference to telecommunications, information or any other alternative. This term encompasses the links between individuals, organizations, localities and systems, in addition to the flow of information, transactions and communications via these links. It covers every type of communication (voice, data and video) for every purpose, ranging from personal use to education and leisure.

³ Arrow K. (1979): “The Economics of Information” in *The Computer Age: A Twenty Year View*, ed., Dertouzos & Moses, Cambridge, MA: MIT Press; Williamson O. (1985): *The Economic Institutions of Capitalism*; New York, Free Press; Akerlof G. (1970): “The Market for Lemons: Qualitative Uncertainty and the Market Mechanism”, *Quarterly Journal of Economics*, 84; Matchup F. (1962): *The Production and Distribution of Knowledge in the United States*, Princeton, NJ: Princeton University Press; Porat M. (1977): *The Information Economy: Definition and Measurement*, Washington, D.C.: Office of Telecommunications-U.S Department of Commerce; Bell D. (1973): *The Coming of Post-Industrial Society: A Venture in Social Forecasting*, New York: Basic Books; Beniger J. (1986): *The Control Revolution: Technological and Economic Origins of Information Society*, Cambridge, MA; Harvard University Press.

Such assertions do not seek to disguise the fact that theories range from the optimistic view, which holds that advanced telecommunication services will converge with networking technology, integrating all societies, to the pessimistic view, which believes the progressive global village to be impossible and sees instead a regressive widening of the information gap.⁴

For example, Mowlana questions the possibility of achieving a true global village and maintains that there will always be States that will not win in the networking race and will not achieve any international representation in global communications owing to ethnic divisions and political problems.⁵

Beyond all the doubts, the global impact of networking technology is remarkable. If we merely consider the user's capacity to connect to a single global space via the Internet, this is an advance many times greater than the traditional impact of a simple telephone line. It is very clear that the challenge is to go into the benefits (as well as certain disadvantages) of networking technology and into possible policies and programmes for developing it in the developing countries.

1 Benefits and disadvantages for developing countries in the evolution towards the information society

There is no doubt that the network revolution has taken place in the industrialized countries. The benefits of using identical technology have been great (decreasing costs) on account of growth in volume. The same success has stimulated ongoing innovation and progress in many different directions. Furthermore, in the area of mobile services the regulators introduced more competition than in the fixed telephony services, which had the effect of maximizing benefits even further.

Consequently, we can affirm that for the developing countries a network revolution will bring the following benefits:⁶

- First, it will optimize economic efficiency and competitiveness since all microeconomic processes benefit from an improved flow of information. In other words, a country that has eliminated its networking difficulties should be able to acquire imports more cheaply, organize its primary and secondary production more efficiently and operate its markets more efficiently. Hence, it should have more possibilities of attracting and exploiting direct foreign investment.
- Second, there will be opportunities for truly exploiting the low costs of factors in international markets given that, contrary to what traditional economists were saying, developing countries can only exploit these low factor costs once the skills, infrastructure and institutional development have passed the necessary economic threshold and, accordingly, the network revolution can widen the products and services base where they can be used as a competitive advantage.⁷

⁴ Innis H. (1950) "Empire and Communications", Oxford: Clarendon Press; McLuhan M. & Powers B. (1989): "The Global Village", New York: Oxford University Press; Deibert R. (1997): *Parchment, Printing and Hypermedia: Communications and World Order Transformation*, New York: Columbia University Press; Pavkic B. & Hamelink C. (1985): *The New International Economic Order: Links Between Economics and Communications*, Paris: UNESCO; O'Brien R. (1983): *Information, Economics and Power: The North South Dimension*, Boulder, CO: Westview Press; Pitroda S. (1993): *Development, Democracy and The Village Telephone*, Harvard Business Review, Volume 71, Number 6; UNESCO (1999): The 1999 World Communication and Information Report.

⁵ Mowlana H. (1996): "Global Communication in Transition: the End of Diversity?", Thousands Oaks CA: Sage.

⁶ Analysis; "The Network Revolution and the Developing World", Final Report for World Bank and InfoDev; Analysis Report Number 00-216, 3 August 2000.

⁷ Porter, M. "The Competitive Advantage of Nations", London and Basingstoke; The Macmillan Press Ltd, 1990.

- Third, the benefits for the human capital, to which can be given more efficient education and health services and a better public administration. The human capital can develop itself and increase its usefulness to the community through distance education. It will be possible to deploy the scarce specialists in resources and health more efficiently, enabling them to serve more people over a wider area. We would also emphasize the opportunities for enhancing the social capital since, as the literature on networking explains, these bring about greater social cohesion, greater availability of information, entertainment, active citizenship and the forging of closer international ties.

All of this also enables us to have a more efficient public administration and to overcome domestic institutional shortcomings in the distribution of resources, the collection of taxes, local government and public services, all of which are characterized by considerable information flows over these vast areas.⁸

Let us now take a look at some of the dangers that may arise for the developing countries and which, were they to do so, could widen even further the gap between them and the developed countries.

The transition to the new network can show up the weaknesses of these countries in areas such as inadequate legal and commercial frameworks, low levels of development in education, knowledge and skills and poor infrastructure. More specifically, and in relation to e-commerce, such weaknesses will result in the country's initiatives being enjoyed instead by other countries, thereby dissipating the benefits and opportunities that would arise from more rapid progress.

Finally, we may add that this global revolution in the areas of industry and commerce brings with it the risk of volatility and instability for the developing countries.⁹

2 Policies for developing countries

The importance of privatization and competition in promoting the development of a modern information infrastructure is generally accepted. Recent studies suggest that privatization with optimum regulation and a competitive mobile market can double the number of lines per capita in the poorest countries of Africa.¹⁰ *Accordingly, it is essential to give attention to the removal of regulatory obstacles between sectors of competition.*

However, we cannot say that only the laws of the market guarantee the possibility of full access to the whole range of services. Users in an area of low density of demand (low population or low expenditure or a combination of both) will have proportionally higher call costs and lower functionality. This phenomenon is essentially rooted in the basic network economies, which involve higher fixed costs and related economies of scale. The same applies to the Internet, which has international content, mainly in English, whereas a significant volume of relevant local content in the local language would make for a more user-friendly connection.

⁸ Analysis, *op. cit.*, p. XV.

⁹ *op. cit.* p. XVII.

¹⁰ InfoDev Working Paper; "The Network Revolution": Opportunities and Challenges for Developing Countries; Global Information and Communication Technologies Department, The World Bank Group, June 2000; p. 21.

Market failures such as these represent significant obstacles to growth in access and content, and it is these very obstacles that are the highest for the poorest and most isolated. This suggests that action to overcome them is not just a question of efficiency but also of vital impartiality¹¹.

3 Promoting universal service

Proactive, institutional policies are central to the promotion of universal service, the objectives of which are defined as a minimum package of services of a specific quality that must be available to all users irrespective of where they live and at a reasonable price for all. Obviously, it is easier and cheaper for the bigger and more modern networks to extend their services to more remote areas.

As our objective is the relatively less developed countries, we should stress that what we find ourselves up against is a structural problem in their economies. For example, in countries with a low teledensity, telecommunication services are generally operated by the public operator on a monopolistic basis (State-run or private); telecommunications in sparsely populated or remote areas are provided on the basis of an agreement between the State and the operator and facilities are supplied that qualify as investments in the list of productive goods. One can clearly observe the difference in the situation of less developed countries as compared to that of countries of intermediate and relatively higher development, where the resources for funding universal service objectives may reasonably be obtained from a blanket tax on telecommunication services. In developed countries, that tax is a low percentage which does not produce any major distortion in the market. However, where the volume of contributors, i.e. taxable users, is low, as occurs in countries having a lesser degree of overall development, any such tax on tariffs or consumer prices either reaches very high percentages which make the service unaffordable, or, if kept at a low level, yields a negligible volume of resources.¹²

We can say that it is a vicious circle of poverty in which not even the State has the capacity to fund or give support to universal access/service policies with which people could have access to network technology. This in turn widens the gap even further between the developed and the poorest countries.

What resources are available to us in order to stimulate universal service in these countries?

4 International cooperation

Many developing nations, international non-governmental organizations and financial institutions assign funds for the poorest countries in various areas. This is a source of resources which would be able to activate such access in those countries.

Once such funds were obtained, the poor countries could apply incentive policies, which we will list below.

¹¹ InfoDev Paper; "The Network Revolution", World Bank, p. 24.

¹² Study Group 1, Rapporteur for Question 7/1: Universal access/service, Telecommunication Development Bureau, Doc 1/115(Rev.2)-E, 5 December 2000.

Government policies would need to have the following features:

- integration with appropriate programmes¹³ and application of “intelligent subsidies”¹⁴;
- raising awareness of local conditions, risks and restrictions;
- introducing an innovative, opportunistic dimension rather than trying to repeat formulas used elsewhere¹⁵.

International assistance can also help domestic efforts in the following ways:

- Giving assistance in the areas of policy reform and research. There is a great variety of international experts on network possibilities.
- Helping developing countries to participate in relevant forums in which the global regulatory environment vis-à-vis information and telecommunication technologies is discussed (ITU, WTO, WIPO, ICANN).
- Research programmes for gaining a better understanding of information and the access needs of developing countries, as well as the most appropriate means of supplying content to the Internet-based environment.

5 Financing of universal service in relatively less developed countries

In Recommendation ITU-D 10 “Options available for financing rural and remote telecommunication programmes and projects”, Question 4/2, the World Telecommunication Development Conference (Valletta, 1998) recommends:

“that administrations and recognized operating agencies¹⁶ of developing countries realize that the three major sources of funding for financing communications for the rural and remote areas are:

- 1) internally generated funds (the best way of achieving sound and effective financing of operation in rural and remote areas);
- 2) private sector investment (through licensing, joint ventures, franchises, rural development funds, etc.);
- 3) other resources.”

However, as we stated earlier, such relatively less developed countries are unable to develop their networks using their own funds, nor can they call on private investment since their markets, which lack the required level of profitability, are unattractive.

We believe that, in order to avoid the situation described by Mowlana with respect to disparities and inequalities between the developed and relatively less developed countries in terms of gaining access to the global village, we need other resources to ensure that the poorest will find their place in that village.

¹³ The term “policy” is used to refer to any mechanism (regulatory, legislative, executive, etc.) which does not require funds. The term “programme” is used to refer to any mechanism that requires funding, whether it be public or private, domestic or international.

¹⁴ These subsidies are awarded by special funds to increase investments in areas that are uneconomic for operators by means of competitive bidding, cuts in costs and improvements in resources. New operators compete with existing ones, contracts being awarded to operators that require the lowest subsidies or undertake to serve a larger coverage area. Hence, subsidies are determined transparently by the market (the World Bank Group Experience to date).

¹⁵ Analysis, *op. cit.*, p. XXII.

¹⁶ Recognized operating agency (ROA) is a category of ITU Sector Member.

6 Other resources for financing universal service

It is our intention in this paper to show that other, alternative sources of financing can be found for universal service:

- 1) Contributions from other financial entities, and
- 2) Identification of existing international financial resources.

6.1 Contributions from other financial entities

The “network revolution” brings with it a multiplicity of benefits for users and companies. However, there are disparities within countries, with certain social strata having access to network services, while other groups merely have access to a multicentre or telephone booth. And then there are even poorer countries in which it is impossible to provide the most basic level of service or access for any level of the population. There is thus a degree of inequality between countries which prevents the poorest among them from having a place in the great global village that we are attempting to create.

Furthermore, since countries, institutions and companies are generally in agreement as to the great significance of network convergence, and given that many market players other than telecommunication companies also benefit from the “network revolution”, the latter could implement mechanisms in support of the efforts by the relatively less developed countries to provide universal service to their remote and poorest areas. Indeed, the ability to establish services and/or access in the relatively less developed countries will also serve to benefit companies which form a part of this chain of services and which have thus far not been called upon to provide any economic or financial support for the efforts that have to be made in order to provide such services.

This leads us to raise a number of questions regarding certain financing possibilities:

- Could the United Nations set up an international fund supported by intergovernmental and non-governmental organizations?
- Could the International Telecommunication Union channel those funds towards the poorest countries?
- Could this fund also be fed by contributions from companies other than telecommunication operators which benefit from the use of network services and products?
- Would we be able to set up and develop other international solidarity mechanisms for the purpose of achieving network development in the poorest countries?

If all of this were to succeed, it is clear that those who contribute to the efforts to achieve greater international equity will find themselves benefiting from that equity in the long term.

6.2 International financial resources: identification

At the same time, we find within the society of nations intergovernmental and non-governmental organizations which comprise the international system and which have demonstrated their growing concern over the inequality between industrialized and developing countries, and have sought to combat this disparity, particularly where poverty is concerned, through the granting of funds, subsidies, soft loans, humanitarian assistance, etc. It is our belief that these same organizations could play a part in fostering universal service, not only through the provision of expert network assistance and other measures to which we have referred, but also by channelling available funds into support for universal service in developing countries.

There is a wide variety of international sources of funding for universal service in poor countries, such as international banks and multilateral and bilateral organizations (see Appendice), as described below.

6.2.1 World Bank

Given the importance of access to network services, the World Bank has made it a priority for its Member States. This has resulted in a reorganization of the Bank's information technology and communication units. For example, the Telecommunications and Informatics Unit, the IFC Unit and InfoDev have joined together to form the new Information Technology and Communication Department. The new group combines the experience of IFC in private sector financing, the experience of the Telecommunications and Informatics Unit in the field of public and private infrastructure, and the experimental activities of InfoDev aimed at making better use of information technologies and telecommunications to combat poverty.

6.2.2 InfoDev

The Information and Development Programme (InfoDev) is the largest and most visible partnership initiative relating to the information infrastructure sector. Launched in September 1995, it is a grant fund set up for the purpose of fostering innovative projects which use information and communication technologies to bring about social and economic development, with particular emphasis on the poor in developing economies.

Over 200 projects in more than 100 countries have been selected for financing, with an average USD 200 000 being assigned per project. The current portfolio of projects includes distance learning and telemedicine initiatives and other pilot programmes in the areas of health, telecentres, the Internet, training for regulators, information and communication applications for the government, e-commerce applications and environmental protection.

The 21 donors are governments and public and private institutions including the Governments of Belgium, Brazil, Canada, Colombia, Denmark, El Salvador, Finland, France, Germany and Italy, and the Commission of the European Union, IBM, Motorola, Telecom Italia and the World Bank.¹⁷

In addition, between 1993 until the end of 1999, the World Bank and InfoDev supported and cofinanced ITU's Regulatory Colloquium, which constitutes the forum within which regulatory authorities and experts from all parts of the world meet annually in order to discuss matters relating to telecommunication regulation. For its part, InfoDev is also planning to launch a regulatory colloquium relating to network economics.

Other educational projects receiving support from the World Bank and InfoDev are the African Virtual University (AVU) and World Links for Development (WorLD).

African Virtual University

This institution was born out of the great demand for education in Africa on the part of a large number of qualified high school graduates who are unable to enter a university owing to the lack of places. This represents a huge workforce that wishes to improve its skills, a greater desire to pay for education and associated training, as well as to reduce the growing digital divide between Africa and the developed

¹⁷ InfoDev, *op. cit.*, p. 31.

world. AVU is the only institution offering technology-based distance education throughout the continent. It will draw on high-quality education from all parts of the world, commencing primarily with engineering, information technology and business programmes, these being the areas of learning most needed by Africa if it is to participate in the network economy.

AVU is creatively integrating satellite and Internet technology, despite the current limitations faced by Africa in the areas of infrastructure and technology. The university was successfully piloted between July 1997 and December 1999. It established 25 teaching centres in 15 countries of sub-Saharan Africa, and provided a total of 2 500 hours of educational programmes in English and French, made available by over 40 leading universities. It signed up 12 000 students for six-month courses, and registered some 2 500 professionals in 25 executive business seminars. It is expected that by 2002, AVU will have 30 university centres and 82 private centres providing courses to 4 800 graduates and 67 000 non-graduates. In 2003, the university is expected to generate income in the order of USD 13 million.

World Links for Development

World Links for Development (WorLD) is helping to set up a global chain of schools around the world. In developing countries, WorLD facilitates connectivity between schools, providing intensive training for teachers, and rigorously evaluates the impact of information and communication technologies on education and training. WorLD now covers 15 countries of Africa, Latin America, the Middle East and Asia, reaching 40 000 teachers and pupils. These pupils work with their counterparts in over 1 000 schools in 20 industrialized countries on the basis of Internet-based learning projects relating to their curricula. By 2004, WorLD expects to reach some three million pupils in at least 40 developing countries.¹⁸

6.2.3 Other sources of international financial assistance

Another unusual and surprisingly large source of financing is that which stemmed from the latest G8 Summit, held in Japan in 2000, and which is referred to as the Okinawa Charter. This focused on development issues, the main item on the agenda having been the “digital divide”.

The special emphasis placed on information and communication technologies was highlighted by the Government of Japan, which announced that it would be making available USD 15 000 million for such technologies in developing countries over the next five years.

The preliminary work was carried out by 34 multinational corporations, multinational organizations and civil society coordinated by the World Economic Forum, as a non-profit-making organization. It took as its main theme the need to move away from the negative perception of the “digital divide” issue to a more positive approach based on “digital opportunities”.

The Charter underlines the importance of InfoDev as an example of a successful programme aimed at attracting the financial and intellectual resources needed for the strategic framework. It likewise underlines the importance of mobilizing public and private sector resources in the interests of improving connectivity and reducing communication costs. It recommends the building-up of human capacity and a higher level of participation by developing country organizations in global knowledge and e-commerce chains. There was a growing acknowledgement of the fact that those who close their eyes to the potential of the revolution currently taking place in the fields of telecommunications and information are missing significant economic opportunities and will ultimately find their competitive position under threat.

¹⁸ InfoDev, *op. cit.*, p. A-10.

APPENDIX

Financial institutions offering resources for projects¹⁹

Multilateral agencies

African Development Bank (AfDB)

Total lending (1998):	USD 1 663.07 million
Telecommunication lending (1997):	USD 33.58 million

Arab Bank for Economic Development in Africa (BADEA)

Total (1998):	USD 1 429.372 million
Technical assistance:	USD 24.588 million

BADEA's financing infrastructure as at end 1998 amounted to USD 734.855 million, of which 2.014% was devoted to telecommunications.

Geographic coverage: Non-Arab member countries of the Organization of African Unity.

Asian Development Bank (ADB)

Total assistance (to end of 1997):	USD 71.6 billion
Authorized capital:	USD 47.1 billion
Telecommunication lending:	USD 1.434 billion

Caribbean Development Bank (CDB)

Subscribed capital:	USD 749.9 million
Total assets:	USD 466.4 million

The Bank is able to finance telecommunication projects in Caribbean countries. Because of the geographic nature of the Caribbean islands, telecommunication development has been an essential area of investment for CDB.

East African Development Bank (EADB)

Paid-up capital:	SDR 27 380 000
Total reserves:	SDR 26 677 000

Lending for telecommunications by EADB is important for the East Africa region. Funding covers rehabilitation/modernization, expansion and acquisition of new equipment and services.

Geographical coverage: Kenya, Tanzania and Uganda.

¹⁹ Financial Institutions Offering Resources for Telecommunication Projects and Technical Assistance in Developing Countries, Fourth Edition, ITU and BDT, July 1999.

European Commission

Contributions to telecommunication development outside the Union (1982-1998):

Donations: EUR 420.6 million

EIB loans: EUR 596.7 million

Geographic coverage: All continents.

European Investment Bank (EIB)

Paid-up capital: EUR 4 652 million

Telecommunication lending (1994-1998): EUR 9.9 million inside the Union
EUR 1.4 million outside the Union

Inter-American Development Bank (IADB)

Authorized capital: USD 100 billion

Telecommunication projects funded by the Bank have included improvement of existing networks, installation of rural service and emergency systems important for earthquake rehabilitation.

Since its inception in 1959, the Bank has approved a total of USD 95 billion in loans, out of which USD 300 million worth of telecommunication projects located throughout Latin America.

West African Development Bank (BOAD)

Paid-up capital: XOF 27 900 million

Total reserves: XOF 27 922 million

Telecommunication lending: XOF 25 833 million (cumulative 1991-1998)

World Bank

Founded in 1944, the World Bank Group comprises five affiliated institutions. Its mission is to obtain long-lasting results in its fight against poverty, and to help population to look after themselves and their environment by providing the necessary resources, transmitting knowledge, reinforcing capacities, and by developing partnerships in the public and private sectors.

The World Bank is owned by 183 member countries, whose views and interests are represented by a Board of Governors and a Board of Directors. Member countries are shareholders who carry ultimate decision-making power in the World Bank.

The Bank's headquarters are in Washington; it has offices in 67 countries, and employs approximately 10,600 people.

The World Bank is the largest source of development assistance. In 2000 it provided more than USD 15 billions in loans.

The Bank carries out its activities in more than 100 developing economies, with the primary goal of helping the poorest people and countries.

International Finance Corporation (IFC)

Total disbursed loan and equity portfolio: USD 8 976 million

Telecommunication lending: USD 138 million

Telecommunication lending (cumulative): USD 2 621 million

Geographic coverage: All developing member countries.

WorldTel

WorldTel Limited is a development company created on the initiative of ITU. It is both a funding and an operating entity that takes up partnership with selected host countries. WorldTel focuses its attention on the provision of basic service infrastructure in the lesser-developed countries, including rural and remote areas.

Total assistance: Joint venture partnership with State-owned and/or privately owned telecommunication and Internet enterprises.

Geographic distribution: Developing countries in Africa, the Americas, Asia, and Eastern Europe.

To facilitate consideration of their projects, host countries are encouraged to become members of the Assembly of Governors. WorldTel is in the process of setting up large-scale telecommunication investment funds for the benefit of developing countries.

Bilateral agencies**Federal Ministry for Economic Cooperation and Development (Germany)**

Total assistance: DEM 88 billion (1990-1997)

Telecommunications:

Commitments: DEM 604 million (1990-1998)

Disbursements: DEM 682 million (1990-1998)

Assistance for telecommunications is decided by bilateral government negotiations.

The terms and conditions vary from country to country, depending on the economic level.

Geographic coverage: Developing countries in Africa, the Arab States, Asia and the Pacific, the Caribbean, Latin America and Europe.

Credit Agency for Reconstruction (KfW) (Germany)

Telecommunication lending (commitments):

Accumulated commitments: DEM 2.2 billion

Commitments: DEM 0.57 billion (1990-1997)

The focus of German governmental financial cooperation has shifted from expanding telephone networks in urban and economic centres towards improving telecommunication facilities in rural areas.

Geographic coverage: All continents

Australian Agency for International Development (AusAID)

Geographic coverage: Mainly the Pacific, Asia and Southern Africa.

Development Cooperation Department (Austria)

The official funds of the Ministry for Foreign Affairs are concentrated on priority regions and countries, mainly on low-income countries in sub-Saharan Africa.

Total assistance:

Telecommunications: USD 1.6 million

Geographic coverage: Bhutan, Burkina Faso, Burundi, Cape Verde, Costa Rica, El Salvador, Ethiopia, Guatemala, Kenya, Mozambique, Namibia, Nepal, Nicaragua, Pakistan, Rwanda, Senegal, Tanzania, Uganda, Zimbabwe

Belgian Administration for Development Cooperation

Finance available for telecommunications:

The Administration's average disbursement in the telecommunication sector amounted to USD 1.10 million.

Geographic coverage: Global.

Ministry of Finance – Treasury (Belgium)

Finance available for telecommunications:

The amount allocated to telecommunication projects varies from year to year. It depends on the resources available and the projects submitted and approved.

Since February 1992, following approval of the order concerning guidelines for export credits receiving public support, the financing of telecommunication projects with aid credits has become more difficult, because many projects in this sector are regarded as commercially viable.

Geographic distribution: All developing countries whose GNP per capita is below USD 3 125 (1997), the limit fixed by OECD.

Canadian International Development Agency (CIDA)

Overall assistance (1998-1999):

Total assistance:	CAD 2 524 million
Telecommunications:	CAD 211.99 million (1994/95 to 1998/99)

Geographic distribution: Asia, Africa, Middle East, Latin America, Central and Eastern Europe.

International Development Research Centre (IDRC) (Canada)

Overall assistance (1998-1999):

Total assistance:	USD 3 733 333
Telecommunications:	USD 6 600 000

With an annual appropriations budget of approximately USD 4 550 000, the Acacia Initiative aims to empower Sub-Saharan African communities with the ability to apply information and communication technologies to their own social and economic development. Acacia takes an integrated approach to addressing applications, technology, infrastructure and policy issues.

The geographic distribution covers all developing countries.

Danish International Development Agency (DANIDA)

<i>Overall assistance 1997:</i>	USD 1 686 million (multilateral and bilateral)
Telecommunications:	USD 7.1 million

Geographic distribution: Africa and Asia

Instituto de Crédito Oficial (ICO) (Spain)

Overall assistance:

Telecommunication lending 1997:	ESP 4 787 million
Telecommunication lending 1998:	ESP 2 249 million

Geographic distribution: Worldwide, with loan concentration in Latin America, Africa and Asia.

United States Agency for International Development (USAID)*Overall assistance:*

Total assistance (1998): USD 8 130 billion
 ODA/GNP ratio: 0.10% of GNP

Various telecommunication initiatives, including:

The Leland Initiative – a USD 15 million United States Government effort to extend full Internet connectivity to approximately 20 African countries.

Geographic distribution: Asia/Near East region, Latin America and Caribbean region, Europe and New Independent States region and Africa.

Agence française de développement (AFD)

Total assistance (1998): USD 882 million
 Telecommunications (1998): USD 2 million

Geographic distribution: Over 80 developing countries in Africa, Asia, the Caribbean and the Pacific.

Natexis (new name of Groupe crédit national – BFCE) (France)

Total assistance (1997): USD 310 811 million
 Telecommunications: USD 14.039 million

Geographic distribution: Aid to developing countries is provided in the form of French Treasury loans and grants. All developing countries other than those managed by the Agence française de développement.

General Directorate for Development Cooperation (Italy)

Overall assistance commitments (1998): USD 873.86 million
 Telecommunications commitments: USD 5.81 million

Mediocredito Centrale (MCC) (Italy)

Total lending (1998): USD 701 million
 Telecommunication lending: USD 23.02 million

Geographic coverage: Worldwide

Ministry of Foreign Affairs (Japan)*Overall assistance (1997):*

Total assistance: USD 14 623.80

Telecommunications:

Loans: USD 171.44 million
 Grants: USD 44.92 million

Loans and grants for telecommunications, only for least developed countries.

Japan International Cooperation Agency (JICA)

Total assistance (1997): USD 9 435 million

Geographic coverage and distribution of activities by technical project: Asia: 42.1%, Middle East: 8.8%, Africa: 15.3%, Latin America: 19.8%, Oceania: 2.9%, and Europe: 4.7%.

Overseas Economic Cooperation Fund (Japan)*Overall assistance (1997):*

Total assistance:	JPY 1 028 633 million
Telecommunication lending:	JPY 31 092 million
Authorized capital:	JPY 5 031.7 billion

Geographic coverage: Developing countries.

Norwegian Agency for Development Cooperation (NORAD)*Finance available for telecommunications:*

During the period 1980-1990, Norway supported the telecommunication sector with approximately USD 120 million in Africa and USD 50 million in Asia.

Ministry of Foreign Affairs (Netherlands)

About 90% of the Netherlands' contribution to telecommunication projects in the period 1991-1997 was devoted to infrastructure projects.

Geographic coverage: Most activities in the field of telecommunications in the period 1991-1997 were concentrated in the following regions: Northern Africa (Ethiopia, Sudan), Southern Africa (Namibia, Zimbabwe) and Asia (China). In this period, projects were carried out in each of the following countries: Ethiopia, Sudan, Suriname and Zimbabwe.

Commonwealth Development Corporation (CDC) (United Kingdom)*Overall assistance (as at 31 December 1998):*

Total approved investment:	GBP 2 809 million
Telecommunication approved investment:	GBP 63 million

The Corporation provides equity, mezzanine finance and loans to finance telecommunication projects in developing countries.

It is able to provide up to USD 50 million for any one project.

Geographic coverage: Central America, the Caribbean, sub-Saharan African countries, least developed countries in Asia/Pacific and the Indian sub-continent.

Department for International Development (United Kingdom)*Overall assistance:*

Total development assistance (1997-1998):	GBP 2.077 billion
Posts and telecommunications sector:	GBP 3.226 million

Geographic distribution: 40% Africa, 35% Asia, 13% Eastern Europe, 12% Latin America, 1% Pacific.

Swedish International Development Cooperation Agency (Sida)*Finance available for telecommunications:*

The objective of Sida's support to the telecommunication and information technology sector is to support the establishment of efficient telecommunication and information systems which are essential for, and contribute to, economic growth. Better information technology and telecommunications are also of great importance for gender equality, education, democracy and health care.

From the 1970s onwards, Swedish support for telecommunications has granted credits amounting to SEK 5.2 billion (of which SEK 1.8 billion represent grant-aid components), SEK 1.6 billion in grant aid to the poorest countries, SEK 135 million for contract-financed technical cooperation and just under SEK 100 million for international courses.

Geographic distribution: 18 countries in Africa, 12 in Asia and 5 in Latin America.

Swiss Agency for Development and Cooperation (SDC)

Total assistance (1998): USD 840 million

Telecommunications (1990-1998): USD 2.3 million

Geographic coverage: SDC's technical and financial assistance is deliberately concentrated on 19 countries and the Sahel zone, which benefit from almost 50% of bilateral ODA. Other developing countries in Africa, the Arab States, Asia and Pacific and Latin America benefit from SDC funds extended with IBRD.

Funds

Abu Dhabi Fund for Development (United Arab Emirates)

To the end of 1998:

Loans: USD 1 859 million

Grants: USD 143 million

Paid-in capital: USD 581 million

Telecommunications: The Fund has committed over USD 1 859 million for all forms of development assistance. Total loans and grants administered by the Fund have exceeded USD 1 617 million in commitments.

Geographic coverage: All developing countries.

Arab Fund for Economic and Social Development (Kuwait)

Overall assistance (to end of 1998):

Total assistance: USD 10 023 million

Authorized capital: USD 2 720 million

Paid-in capital: USD 2 254 million

Telecommunication spending: USD 348 million

Geographic coverage: Member States of the Arab League.

Kuwait Fund for Arab Economic Development

Authorized capital (to end of April 1999): USD 6 500 million

Finance available for telecommunications: Over 549 loans totalling USD 9 214 million have been committed to over 90 countries in all economic sectors. About 3.8% of total loans are devoted to the telecommunication sector, totalling USD 354 million by the end of April 1999.

Geographic coverage: All developing countries.

Saudi Fund for Development (Saudi Arabia)

Overall assistance (to end of 1998):

Telecommunication lending: USD 67.4 million

Paid-in capital: USD 8 226 million

Geographic coverage: All developing countries.

CHAPTER II

Analysis of the situation by region

1 African Region

This section is a synthesis of the replies from countries of the Africa Region (summarized in the attached table) to the questionnaire on universal access/service.

The analysis relates to the replies from the following countries: Botswana, Chad, Eritrea, Gabon, Ghana, Kenya, Madagascar, Mali, Mauritania (Islamic Republic of) Morocco (Kingdom of) Niger, Tanzania, Togo, Tunisia and Zambia.

Until recently, for many of these countries telecommunication services were regarded as a luxury and the exclusive province of the business community. Today the services are considered to be part of the basic needs or priorities of African people.

The current objectives of universal service are an important step for the African countries and entail making basic fixed telephony accessible in all regions at affordable prices, taking into account the particular case of low-income customers and unprofitable public telephony, as well as far-flung regions, while observing the principle of neutrality of nascent competition in terms both of the universal service obligation and its financing.

To take into account certain important differences between countries in a report based on respect for accuracy and a synthetic approach, the main exceptions and other special characteristics have been highlighted.

Some details have been added to the initial summary to clarify certain cases. On the basis of further discussion, additional details or comments may be added to improve the document, if that is deemed necessary, in order to permit a better grasp of the conclusions arising from the questionnaire.

1.1 Definition

Generally speaking, universal service means providing access to the telephone for the entire population of the country. In most countries, it is also specified that the service must be affordable and of reasonable quality.

Main exceptions

In Kenya, the definition of universal service is more specific: no one must have to walk more than 5 km to have access to a public telephone. Eritrea has adopted the idea of "development of access". Mali, which has no legal definition of universal service and has adopted the same general definition of universal service in its business plan, requires the service to be profitable. There is no definition of universal service in the following countries: Botswana, Ghana, Tanzania and Tunisia. In Madagascar, the definition is broader and introduces the principle of general availability of the basic telephone service.

1.2 Obligation/Application

The chief obligation concerns the dominant operator, which generally has an operating monopoly.

Main exceptions

In many countries where the market is already open (or opening) to competition, all operators are bound by the universal service obligation. This is the case for the following countries: Botswana, Chad, Gabon, Kenya, Madagascar, Mauritania, Morocco, Niger and Togo. Tanzania envisages subjecting the dominant operator and cellular service operators to the universal service obligation. There is no legal universal service obligation in Ghana or Mali.

1.3 Scope

Access generally refers to the availability of public telephones throughout the country (including rural areas).

Main exceptions

There are a large number of countries in which the definition of universal service is extended to include disabled people, schools and hospitals in rural areas. (Togo also extends this obligation to NGOs having a social function, Madagascar to emergency calls, and Gabon to directory enquiries and emergency calls.) The countries cited earlier in which there is no legal universal service obligation make provision for coverage in rural areas, which is a public service function.

1.4 Contribution

In general, all operators must make a contribution under the universal service obligation, in proportion to the volume of their activities. In some cases, the “play or pay” principle may be adopted, whereby an operator can opt to make a contribution to the dominant operator rather than fulfil the universal service obligation.

Main exceptions

These are countries in which the universal service obligation applies solely to the dominant operator and those in which there is no legal universal service obligation (Eritrea, Mali). Provision of service in rural areas, which is a public service mission, is carried out under the cross subsidy system.

1.5 Financing

Financing systems under the universal service obligation are very varied. Financing is most frequently based on the revenue of the dominant operator and all the other operators. In many countries, financing relies both on the revenue of the dominant operator and direct State subsidies, or else on revenue from all operators combined with subsidies (Botswana, Madagascar, Niger and Togo), while in Eritrea other resources (subsidies and donations) are also used.

Main exceptions

In Chad, it is planned to institute a contribution system shortly. Also excepted are the countries where there is no legal universal service obligation.

1.6 Universal service obligation (USO) funds

Many countries are planning to set up a USO fund. Such a fund already exists in Ghana, Madagascar, Mauritania, Niger and Togo.

Main exceptions

These include the countries cited above in which there is no legal universal service obligation. Other countries are studying the possibility of instituting a fund later (Chad, Eritrea, Gabon, Tanzania). Also included are many countries in which the universal service obligation applies solely to the dominant operator or to a monopolistic operator.

1.7 Application

In general, in countries where there is a universal service obligation, it is up to the regulatory body to verify compliance with the obligation.

1.8 Other considerations

The approach adopted in the issuing of licences is completely different once liberalization of the telecommunication market has begun. In certain countries, the universal service obligation is not one of the requirements for obtaining an operating licence on the telecommunication market (Gabon, Ghana). Conversely, in most countries, this condition must be complied with to obtain a new licence (Botswana, Chad, Eritrea, Kenya, Lebanon, Madagascar, Mauritania, Morocco, Niger, Tanzania, Togo).

Questionnaire on universal access/service (UA/US)
(Part I)

Country	Definition of US/UA	US obligations	Is a non-US operator obliged to contribute to costs borne by another operator which does have a US obligation?	Do telecom operators have the choice of extending service to unserved customers or contributing to the cost of doing so by the dominant operator?	What does the US obligation include?	Is the US obligation a condition for obtaining a licence?
Botswana	No definition	Yes, imposed on: <ul style="list-style-type: none"> • dominant operator • all other telecom operators • cellular operators 	No	Yes	<ul style="list-style-type: none"> • Extension of service to rural areas • Provision of service to disadvantaged citizens 	Yes
Chad	Service which provides a country-wide minimum telecommunication service of a high standard and at an affordable price for all	Yes, imposed on: <ul style="list-style-type: none"> • dominant operator • all other telecom operators • cellular operators 				Yes
Eritrea	Guarantee of increasing access to telecommunications for citizens	Yes, imposed on: <ul style="list-style-type: none"> • dominant operator 	Yes	Yes	<ul style="list-style-type: none"> • Extension of service to rural areas 	Yes
Gabon	Provision of basic quality telecommunication services at affordable prices to any person so requesting	Yes, imposed on: <ul style="list-style-type: none"> • dominant operator • all other telecom operators 	Yes	Yes	<ul style="list-style-type: none"> • Extension of service to rural areas • Provision of service to disadvantaged citizens • Provision of service to rural schools • Provision of service to rural hospitals • Other 	No
Ghana	No	No	Yes	No	<ul style="list-style-type: none"> • Extension of service to rural areas 	No
Kenya	Provision of telecommunication services in the form of public telephones, telecentres, etc., not more than 5 km walk away	Yes, imposed on: <ul style="list-style-type: none"> • dominant operator • all other telecom operators • cellular operators • satellite service providers 	No	No	<ul style="list-style-type: none"> • Extension of service to rural areas • Provision of service to disadvantaged citizens 	Yes
Madagascar	Provision of a quality telephone service to everyone at an affordable price	<ul style="list-style-type: none"> • To all other telecom operators 	Question not applicable at all	No	<ul style="list-style-type: none"> • Extension of service to rural areas • Provision of service to disadvantaged citizens • Provision of service to rural hospitals • Other 	Yes
Mali	Offering telecommunication services to the largest possible number of users, throughout the country, ensuring good quality of service at affordable prices while guaranteeing profitability	Yes, imposed on: <ul style="list-style-type: none"> • the dominant operator subject to profitability of telecommunication services as a whole 	No, the telecommunication operator has a monopoly	Yes	<ul style="list-style-type: none"> • Extension of service to rural areas 	Question not applicable as liberalization not effective in Mali

Questionnaire on universal access/service (UA/US) (end)
(Part I)

Country	Definition of US/UA	US obligations	Is a non-US operator obliged to contribute to costs borne by another operator which does have a US obligation?	Do telecom operators have the choice of extending service to unserved customers or contributing to the cost of doing so by the dominant operator?	What does the US obligation include?	Is the US obligation a condition for obtaining a licence?
Mauritania	Access to telecommunication services for all on reasonable conditions, by providing subscriber services to those that can afford them and installing an adequate number of telecentres or community centres for others	Yes, imposed on: <ul style="list-style-type: none"> • dominant operator • all other telecom operators • cellular operators 	Yes	Yes	<ul style="list-style-type: none"> • Extension of service to rural areas • Provision of service to disadvantaged citizens • Provision of service to rural hospitals • Provision of service to rural schools 	Yes
Morocco	Availability to all of a minimum telephone service of a high standard and at an affordable price, routing of emergency calls, provision of a directory enquiry service and telephone directories, and nationwide payphone coverage, all of which on the basis of equality, continuity, universality and adaptability	Yes, imposed on: <ul style="list-style-type: none"> • all other telecom operators 	Yes	No	Country-wide coverage	Yes
Niger	Access to telecommunication services for all on reasonable conditions, by providing subscriber services to those that can afford them and installing an adequate number of telecentres or community centres for others	Yes, imposed on: <ul style="list-style-type: none"> • dominant operator • all other telecom operators • cellular operators 		Yes	<ul style="list-style-type: none"> • Extension of service to rural areas 	Yes
Tanzania	No	Yes, imposed on: <ul style="list-style-type: none"> • dominant operator • cellular operators 	Not yet determined until the modalities of setting the fund are completed	Yes, but contribution to the cost will be determined [...] establishment of the rural fund	<ul style="list-style-type: none"> • Extension of service to rural areas 	Yes
Togo	Minimum provision to the public, country-wide, of a telecommunication service at an affordable price on the basis of the principles of equality and universality	Yes, imposed on: <ul style="list-style-type: none"> • dominant operator • all other telecom operators • cellular operators • satellite service providers • others 	Not provided for in legislation	Yes	<ul style="list-style-type: none"> • Extension of service to rural areas • Provision of service to rural hospitals • Provision of service to rural schools 	Yes
Tunisia	Yes	Yes			No US obligation	

Questionnaire on universal access/service (UA/US)
(Part II)

Country	How are USOs financed?	How do you calculate the amount for US?	Does your country have a US fund?	Is there an audit to determine compliance with US obligations?	Is there consultation to determine the appropriateness of US obligations?	Documentation
Botswana	<ul style="list-style-type: none"> • TO revenues • Government subsidies 	As a percentage of turnover as social obligations for the licensed operators	No	No	No	No document
Chad	This will be decided by the regulatory authority	This will be decided by the regulatory authority	No		Telecommunications in Chad are in the throes of restructuring, and it will be for the regulatory body now being set up to specify the US obligation, which is an integral part of TOs' mandates	
Eritrea	<ul style="list-style-type: none"> • TO revenues • Other: Fines, grants, donations, etc. 		Yes	No	No	Eritrean declaration 1998
Gabon	<ul style="list-style-type: none"> • TO revenues 	Will be determined by the intermediary regulator	Yes Forthcoming legislation calls for the establishment of a fund of this type, which will be managed by the regulator	This type of audit is provided for under the forthcoming legislation to regulate the telecommunication sector	No	All the documents on future regulation and policy to be applied at the national level in Gabon are under consideration by the authorities
Ghana	<ul style="list-style-type: none"> • TO revenues 	1% net revenues contribution by operators	Yes Paid to the operator, distribution is yet to be decided	No	No	<ul style="list-style-type: none"> • National Communications Policy (2000)
Kenya	<ul style="list-style-type: none"> • TO revenues 		No	Yes	No, but there is growing concern over the need for consultation	<ul style="list-style-type: none"> • Telecommunication and postal sector policy statement (April 1999) • Regulations pursuant to Kenya Communications Act 1998
Madagascar	<ul style="list-style-type: none"> • TO revenues • Public subsidies 	Study undertaken by OMRT	Yes, all telecommunication operators pay an annual contribution equivalent to 2% of the annual turnover net of accounting tax. This contribution is collected and managed by the regulator.	Yes	No	Decree No. 99-191 on the arrangements for implementing and financing access to Telecommunication Services Act No. 96-034 dated 27 January 1997
Mali	<ul style="list-style-type: none"> • TO revenues 	Not yet decided, since there is only one operator	No	Not yet	Not yet	

Questionnaire on universal access/service (UA/US) (end)
(Part II)

Country	How are USOs financed?	How do you calculate the amount for US?	Does your country have a US fund?	Is there an audit to determine compliance with US obligations?	Is there consultation to determine the appropriateness of US obligations?	Documentation
Mauritania	<ul style="list-style-type: none"> • TO revenues • Government subsidies • Interconnection charges • Other (universal access fund) 	A decree under Act 99019 will specify the arrangements for financing and managing the universal access fund	Yes	Yes	No	
Morocco	Contribution of 4% of turnover from all operators	The total net cost of providing US is the sum of the net costs borne by fixed public telecommunication network operators in respect of subscriber connection costs, fixed subscription charges, installation of pay-phones, the enquiries service and the subscriber directory	No	Yes	No	Act 24-96 of 1997 Decree No. 2-97-1026 of 1998
Niger	<ul style="list-style-type: none"> • TO revenues • Government subsidies • 4% of operators' turnover 	4% of annual turnover for all private operators and 1.5% for the incumbent operator until the end of the exclusivity period (2004)	Yes, the 4% of turnover collected annually is paid into a special account and managed by the regulatory authority, which awards the contract for providing US on the basis of an invitation to tender	Yes	Yes, through an invitation to tender issued by the regulatory authority, a TO can be awarded a licence which will ensure a turnover enabling it to meet USOs	
Tanzania	<ul style="list-style-type: none"> • TO revenues • Modalities of financing USOs are in process 	Not yet devised	No, the fund is in the process of being established	Yes	Yes, the National Telecommunication Consultation Forum is convened annually to discuss issues pertaining to infocommunication development in the country which among other things will be the need for Service Obligation and/or licensing conditions	The documents relating to US are still under review. We shall send them to you once they are ready
Togo	<ul style="list-style-type: none"> • TO revenues • Government subsidies 	Percentage of income	Yes	Yes, an audit is being introduced	Choice of second operator, TELECEL, was made following public consultation	<ul style="list-style-type: none"> • Telecommunication Act, 1998 • Declaration of sectoral policy by the Government, 1996
Tunisia	There is no USO		Yes	Yes	Yes	

2 Americas Region

2.1 Interpretation of the survey

On the basis of the replies to the questionnaire, and taking into account the specific characteristics of the development of the telecommunication market in each country, the following conclusions have been reached:

- Universal service exists in the great majority of the countries that replied, and is defined in regulations (although it differs according to the circumstances of the country).
- In answer to the question of who has the obligation to provide universal service, the majority of the replies stated that the obligation was imposed on the incumbent service provider. However, it is considered that this assertion is to some extent influenced by the country's regulatory framework, particularly where the country has services that are provided under a State monopoly.
- There is a marked tendency in medium- and low-development countries to favour imposition of the obligation to contribute to the cost of universal service on all operators (some, but not all, respondents having indicated the source of financing). In the countries with the lowest level of development, and in some medium-development countries, the obligation is also imposed on cellular operators.
- In general, the replies indicate that satellite service operators do not contribute to universal service.
- As regards scope, the general tendency, regardless of development-level, is towards an extension of universal service and increased penetration. (Nothing is said about subsequent maintenance.)
- The sample of countries reveals no pattern indicating that the need for additional services is dependent on the level of development. There are thus both high- and low-development countries which include services for the disabled. It would therefore appear that requirements for schools, hospital services and services for the disabled do not depend on the country's level of development.
- It cannot be concluded from the replies to the questionnaire that the universal service obligation should be imposed on the incumbent operator as a condition for obtaining a licence. However, this being the norm for incumbents, it cannot be inferred that the obligation does not exist for other operators.
- As to financing, the majority of the countries indicated that they finance the USO from a percentage of the revenue of operators currently present in the market. Where there is a monopoly operator, the USO is financed either by a percentage of the operator's revenue or by government subsidy.
- The following conclusions have been reached concerning the administration and management of the universal service fund:
 - a) as a general rule, the regulatory authority supervises the fund in countries where universal service is actually implemented (except in the case of monopolies, where very often there is no regulatory authority);
 - b) as regards the methods used to calculate the necessary financing, the results are quite clear. Medium- and low-development countries set a fixed amount on the basis of an investment plan, investment targets or a master plan established by the regulatory authority. Among the high-development countries, contrary to what one might expect, only one country stated that it applies long-run incremental costs (LRICs) (Australia); others merely referred to future plans to implement LRICs.

- Oversight of the use of the fund is the responsibility of the supervisory authority in the great majority of the countries that actually implement universal service.
- It would appear that public consultation is implemented by only a few countries and that the practice is unrelated to level of development.

2.2 Universal service costing and financing

The definition of a costing and financing methodology is undoubtedly one of the most controversial aspects of universal service and among the most difficult to analyse in that the coexistence of different regulatory frameworks and different economic, social and political circumstances makes the adoption of a single permanent financing and costing model difficult.

There are two approaches or methodologies. One is based on LRICs and the other on historical costs.

The point in time and the approach a country chooses in order to implement changes in its telecommunication regulation policy have a decisive influence on **how** it will cost and finance universal service.

As can be seen from the following table, in the Americas there are different points in time and hence different approaches to defining deregulation policy:

Evolution of regulation over time²⁰

Country	Before 1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Argentina				Law/State Reform	Privatization									Liberalization (Oct/Nov)
Brazil										Amendment/Constitution	Minimum Law/Cellular	Telecom Law Reorganization Telebrás	Concession Telebrás and Embratel	(Mirror licences)
Bolivia									(Law/capitalization) Law/System Reg. Sector)	Telecom Law Capitalization/ ENTEL				
Colombia			Telecom Law	Concessions	Right to competition	Constitution establishes free competition		Law/Cellular Foreign investment	Law/Residential serv. (local liberalization)				Competition/local and long distance	
Costa Rica	1963: ICE as public enterprise 1964: RACSA												Cooperation process for reform	
Chile	1982: Telecom Law Competition	Privatization/CTC		Privatization/ENTEL					Multi-carrier system					
Cuba	1982: Decree/joint enterprises						CUBACEL (joint enterprise) Mobile concession		ETECSA (joint enterprise) Fixed Concession			Law/foreign investment		

²⁰ “Competition” and “privatization” refer to the basic telephony market.

Evolution of regulation over time²⁰ (cont.)

Country	Before 1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Ecuador							Special Telecom Law/estab. Emetel			Law restructuring Emetel		Auction, not completed	Auction, not completed	
El Salvador											Law/Liberalization Tariffs		Liberalization/sector	
Guatemala											General Telecom Law-Liberalization	Creation/ TELGUA	Privatization	
Honduras										Framework Telecom Law				
Mexico					Privatization				General Telecom Law			Competition/long distance		
Nicaragua										General Telecom Law Law/Private Incorporation				
Panama										Law 5, restructuring INTEL		Sale of 49% of INTEL		
Paraguay							Constitution General principle of competition			Telecom Law/ Transfer ANTELCO				

Evolution of regulation over time²⁰ (end)

Country	Bofore 1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Peru						General Telecom Law			Regulation/ limited competition Privatization of Entel-CPT	Entel-CPT merged to form Telefónica del Perú			Liberalization	
Puerto Rico											Federal Law PR Telecom Law			Privatization/ PRTC
Dominican Republic					Concession/new licences								General Telecom Law Competition	
Uruguay	1974: Antel public enterprise													
Venezuela	1940: Telecom Law					Privatization								

	Public enterprises		Privatization without competition
	Semipublic or cooperative enterprises		Competition without privatization
	Restructuring process		Competition with privatization

Exclusivity and competition – how the market does things

The table below shows cases where exclusivity has been granted following sector restructuring.

Table – Exclusivity (limited in time) in Latin America

Country	Characteristics of exclusivity ¹⁾		
	Services provided on exclusive basis	Start	Duration (years)
Argentina	BTS, L, NLD, ILD	1990	10 (7 plus 3)
Bolivia	BTS, L, NLD, ILD	1995	6
Brazil	BTS, L, NLD	1998	~0.5 ²⁾
Chile	No		
Colombia	No		
Costa Rica	No restructuring		
Cuba	No restructuring		
Ecuador	BTS, L, NLD, ILD ³⁾	1995	5
El Salvador	No		
Guatemala	No		
Honduras	BTS, telex and telegraphy ³⁾	1995	10
Mexico	BTS, NLD, ILD	1990	6
Nicaragua	BTS, granted to ENITEL ³⁾	1995	4
Panama	BTS, L, NLD, ILD, public and semi-public telecommunications, leased voice circuits	1997	5
Paraguay	No restructuring		
Peru	BTS, L, NLD, ILD	1994	5
Puerto Rico	No		
Dominican Republic	No		
Uruguay	No restructuring		
Venezuela	BTS, L, NLD, ILD	1991	9

1) Exclusivity refers solely to concessions limited in time which have followed a restructuring process. This excludes exclusivity prior to restructuring (Costa Rica, Uruguay, etc.). Duration refers to the periods for which exclusivity was granted, even where reductions of the exclusivity period were negotiated subsequently.

2) Administrative period for auctioning mirror licences. Thereafter, duopoly until 2001.

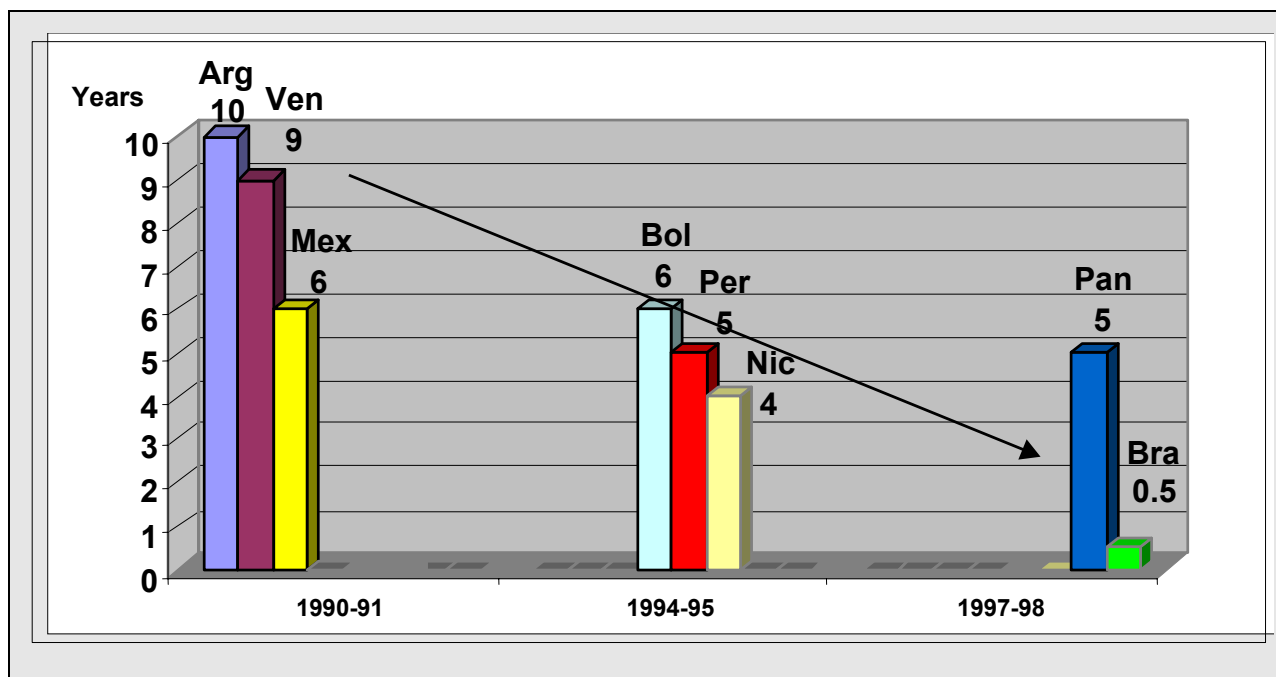
3) HONDUTEL and ANDINATEL-PACIFICTEL are still public enterprises. ENITEL is a limited company through State-owned shares.

BTS: Basic telephone service
L: Local
NLD: National long-distance
ILD: International long-distance

It can be observed that in more than half of the cases where the sector was restructured exclusivity regimes have been established, though in three of the cases the companies have remained in the public sector.

It is also interesting to note the period for which exclusivity is granted to private operators or operators in which private capital has a share (previous table).

Figure – Exclusivity period – duration of monopoly privileges



The above figure indicates that the more recent the period, the shorter it tends to be. In Argentina and Peru, reduction of the exclusivity period was negotiated. This suggests that what was a fairly widely accepted market management tool at the beginning of the 1990s was much more difficult to use by the end of the decade. Indeed, the development of international agreements, particularly the WTO agreement, may mean the prohibition of measures of this kind in the short term.

As regards the competition models that countries have adopted, it is worth noting that, quite apart from what competition has meant in terms of opening up markets and the entry of new players, other regulatory measures related, albeit indirectly, to competition have been taken in an attempt to:

- i) avoid the emergence of dominant positions by prohibiting vertical integration of services (local + long distance, voice + data, etc.);
- ii) segment markets into geographical areas in order to prepare the ground for future competition and/or be in a position during the period of exclusivity to compare conditions for supply, although not necessarily in the same geographical market.

Having examined regional trends in telecommunication deregulation, the question arises as to whether there is a “single”, recommendable cost model.

In answering this question, it must be borne in mind that the region analysed differs significantly from the most advanced regions (Europe and the United States):

- 1) In the region analysed, service penetration rates are very low in the interior of countries as compared to major cities (as was the case in Europe and the United States at the beginning of the 1970s).
- 2) In Europe, the United States and Japan, liberalization policies came well after the implementation of universal service. Universalization objectives were therefore covered either by cross-subsidies from the telephony service or direct contributions from the government through specific plans.
- 3) The United States and Europe began to introduce LRIC cost models in 1996 with the adoption of new telecommunication laws after a period of accelerated service penetration and universalization in the 1980s and early 1990s. Thereafter they embarked on a process of opening up and of liberalizing their telecommunication markets.
- 4) In Latin America, on the other hand, the entire process is taking place all at once, having been under way for an average of seven years at most.

In analysing costing methodologies, the most important component to be considered is interconnection. In many countries, particularly the United States, interconnection has subsidized universal service for years. The global tendency to impose lower interconnection charges is a major hindrance to the regulator when such charges are used to finance universal service. At the same time, anxious to increase the number of competitors and enhance market efficiency, governments are intent on reducing interconnection charges. This focus on service “supply and demand” is at variance with the requirements of universal service. Governments, particularly those with the largest financing requirements (generally those with the fewest resources) should therefore adopt a costing and financing methodology which is suited to the model they have chosen for opening up in the markets.

Countries which have opted for temporary private exclusivities could finance universal service with cross-subsidies from interconnection. Those which are opening up to competition will need to adopt cost models that are geared to eliminating subsidies.

Questionnaire replies – Americas Region

			1	2					3	4	5				
			Universal service definitions	Universal service obligations					Operators with no obligations		Scope of universal service				
Country code	Country	Source of information	Regulation?	Incumbent operator	All operators	Cellular operators	Satellite Service operators	Others	Obligation to contribute to cost	Choose to extend service or contribute	Rural areas			Disabled	Other
											Extension of service	Schools	Hospitals		
1 2	Argentina	Movicom Telecom	Yes. Regulations establishing who contributes to fund, how, and how much.	Yes	No	No	No	No	Yes. Through tax on total revenue	No. Only those providing service	Yes	Yes	Yes	Yes	Extension possible
3	Bahamas	Public Utilities Commission Bahamas	Yes. In the 1999 Telecommunication Act	Yes	No	No	No	No	Only one operator, as privatized recently.		Yes	Yes	Yes	Yes	-
4	Belize	Belize Office of Telecommunications	Yes. In the strategic development plan	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	-
5	Canada	Industry regulatory issues	Yes. In the Telecommunication Act	Yes	No	No	No	No	Yes	No	Yes	No	No	No	Basic telephone service, individual lines, free ISP access, etc.
6	Ecuador	Consejo Nacional de Telecomunicaciones	No	No	No	No	No	-	No	No	-	-	-	-	-

Questionnaire replies – Americas Region (cont.)

			1	2					3	4	5				
			Universal service definitions	Universal service obligations					Operators with no obligations		Scope of universal service				
Country code	Country	Source of information	Regulation?	Incumbent operator	All operators	Cellular operators	Satellite Service operators	Others	Obligation to contribute to cost	Choose to extend service or contribute	Rural areas			Disabled	Other
											Extension of service	Schools	Hospitals		
7	Mexico	Comisión Federal de Telecomunicaciones	No, but social coverage obligations exist	Proposals are being implemented and will be incorporated in the National Regulations on Universal Service. Replies to the other questions are therefore premature.					Under consideration	No	Yes	Yes	Yes	Yes	-
8	Panama	Ente Regulador de los Servicios Públicos	No	Yes	No	No	No	-	No	No	Yes	-	-	-	-
9	St. Vincent and the Grenadines	Ministry of Communications	No	No	No	No	No	No	-	-	-	-	-	-	-

Questionnaire replies – Americas Region (end)

Country code	6	7				8	9			10	11	Comments
	USO imposed on incumbent operator as condition for obtaining licence	USO financing				Universal service fund			Enforcement			
		From telecom operators' revenue	Government subsidy	Interconnection charges	Other	Calculation of financing required	Existence of fund	Collection and distribution	Annual audit by regulatory authority	Public consultation		
1 2	No	Yes	Yes, through specific programmes	-	-	0.6% – 1% tax on revenue	Yes, but not implemented	By an administrator appointed by the regulatory authority	Yes, annually	Yes. Ongoing consultation by management committee		
3	Yes. Recently privatized, scheduled to open in 3 to 5 years	Yes. Current operator	No	No	-	Not applicable, as privatized recently. Obligation on the monopoly operator for universal service objectives						
4	Yes		Yes	No	-	-	No	-	Yes	No		
5	No	No	No	No	Yes. Explicit contribution from all LD operators	From the fall in dominant operator's revenue from local service provision	Yes	Per-minute LD charge paid to local service providers for access-deficit lines	No	Yes, in respect of coverage and financing		
6	No	-	-	-	-	-	No	-	No	No		
7	No	Yes, USF proposed	No	Yes, at present	Yes, cross-subsidy between commercial and residential sectors	With a costing model (bottom up/ forward-looking) suited to Mexico's geography	No	-	No	Yes, with a view to financing the fund from a percentage of revenue		
8	Yes	Yes	-	-	-	Not applicable	No	-	Yes	-		
9	-	-	-	-	-	-	No	-	-	-	Currently a monopoly. Legislation is planned which will liberalize telecommunications, generating a service fund with compulsory contributions from all telecommunication operators.	

3 Asia-Pacific Region

The Asia-Pacific Declaration recommendation on network development addresses universal access – “to provide at least the basic telephone services within the reach of the people”.

This section includes a synthesis of the responses to the questionnaire (see table hereafter) on universal access/service received from the countries in Asia and the Asia-Pacific Region, namely Australia, Bhutan, Cambodia, China, Fiji, Indonesia, Islamic Republic of Iran, Kuwait, Lebanon, Malaysia, Maldives, Pakistan, Philippines, Republic of Korea, Sri Lanka, Thailand, United Arab Emirates. Universal access/services is very important to countries in Asia and Asia-Pacific Region. In this region there are developed countries and less developed countries. Although in some countries universal service obligations are not specifically included in the telecommunication legislation, there are informal obligations for providing universal access/services.

3.1 Definition

Generally, countries where universal service definition is introduced by legislation or by regulation consider that telecommunication service must be available for the entire population across the country. Some countries include availability of telecommunications to all inhabitants at affordable prices and reasonable standards of quality.

Main exceptions

Except for China, United Arab Emirates, Cambodia, Bhutan and Fiji, other countries have definitions for universal service in their respective laws, regulations, telecommunication policies or by way of a ministerial decree. Lebanon and Cambodia have considered including a definition on universal service in their new law. Pakistan will provide a definition in their new policy document. Philippines has a working level definition. In Thailand, at the end of year 2000 the National Telecom Commission will be set up and the primary function will be to define Universal Service/USO. Since Maldives is an archipelago of some 1 190 small islands spread over 90 000 sq. km of the Indian Ocean, the definition of universal service is “to provide at least a connection to all inhabited islands”. In Kuwait and Sri Lanka, universal service means provision of basic telecommunication services which are reliable and affordable. Australia extends the definition to include: provision of standard voice grade telephone service on demand to all Australians; provision of reasonable access to payphones to all Australians; provision of a range of disability related equipment; access to a relay service for hearing-impaired, and ISDN digital data service on demand for all Australians. In Indonesia, Universal Service is the provision of telecom network by telecom operators so that the public’s needs, especially in remote areas or left-behind areas of telephony access, can be fulfilled.

3.2 Obligation

The main imposition corresponds to the dominant operator which is usually the only monopolistic telecommunication operator. In certain countries all operators are obliged to provide universal service.

Main exceptions

Fiji does not have a universal service obligation although the national carrier concentrates on rural communications. In the Maldives, it is the monopoly operator who has to provide universal service. In Sri Lanka, the Government is obliged to provide universal service. Only the dominant operator has Universal Service Obligations in Thailand. In the Philippines, the international gateway operator has universal

service obligations. In Indonesia, Korea, Kuwait, Malaysia (except satellite providers), Pakistan, all operators have to provide universal service. In China, Universal Service Obligations are imposed on the dominant operator and cellular radio operators.

In Australia, universal service is currently imposed on the dominant operator but may legally be imposed on other operators.

3.3 Contribution

In general, all operators must make proportionate contributions to universal service. Pay or play is considered by a few countries in the region.

Main exceptions

In Bhutan and the Maldives, there is only one operator. In Fiji, Iran, Kuwait, Lebanon, Pakistan, Sri Lanka, and Thailand operators do not contribute to the costs borne by other operators. In Cambodia, Korea and the Philippines the pay or play principle is considered. In Australia, although Universal Service Obligations are currently imposed on the dominant operator, it may be legally imposed on any carrier and the Government is considering practical ways of allowing other carriers to compete for access to subsidies from the Universal Service Obligation Fund. In China, it is still under study.

3.4 Financing

There is a very heterogeneous combination of USO financing systems. The main idea is a concentration on the revenue of the dominant operator and in some countries on all operators. Many countries combine revenues from the dominant operator and government subsidies.

Main exceptions

In the Philippines, there is no Universal Service Fund and a study is currently conducted to identify source of funding. The Universal Service Fund will be established in Cambodia in the near future in the new telecommunications law and Pakistan will include it in the new policy document.

3.5 Scope

Usually access is referred to pay-phone availability across the country, which includes rural areas.

Main exceptions

Australia, Indonesia, Kuwait, Lebanon, Malaysia and Pakistan have extended the definition to include disadvantaged citizens, rural schools, rural hospitals and healthcare centres. All inhabited islands are concerned in the Maldives. In China, it is under study. Telephone Organization of Thailand (TOT) has more than 150 000 pay phones covering more than 50 000 villages out of the existing 70 000 villages.

3.6 Universal Service Fund

Many countries are considering the future constitution of an Universal Service Fund. There is a Universal Service Fund in Australia, Indonesia, Iran, Korea, Malaysia. Pakistan is considering a fund in the future where licensees will pay with other dues such as renewal fees, or royalties. Australian Communication Authority (ACA) invoices the carrier for a portion of the net universal cost based on their share of overall telecommunication revenues. In Indonesia, there is a Universal Service Fund to which contributions are made by non-fixed telecom operators.

Main exceptions

In countries where USO has not been included in the legislation, there is no provision for a Universal Service Fund. There are some countries which are currently studying the possibility of implementing a fund in the future (Cambodia, Pakistan).

3.7 Enforcement

In general, the regulatory authorities control meetings concerning USO. In the Philippines, there is consultation with the private sector through the National Consultation Forum. In Australia, ACA monitors and investigates complaints. Public fora on regional communication issues are held. In Pakistan, an annual audit is conducted by Pakistan Telecommunications Authority (PTA) which reports to the Government. In China, Indonesia and Thailand, an annual audit is conducted to determine to what extent the telecom operators are meeting their Universal Service Obligations. The institution or authority conducting such an audit is not mentioned in their responses.

In Sri Lanka, the Public Enterprises Reform Commission (PERC) monitors incentives granted to the dominant operator, and the regulator ensures compliance with licence conditions by all operators. The dominant operator is expressly excluded from provision of USO until year 2002. In Korea, public hearings are held occasionally. In Malaysia, both the Ministry and the Communications and Multimedia Commission have consultations with relevant industry participants.

Main exceptions

Lebanon and the United Arab Emirates have not commented and in Fiji the Ministry of Communications requests reports from the national carrier. In China, Indonesia and Thailand, the Ministry of Communications or the national regulatory authority do not have a public consultation process to determine the appropriateness of or need for USO and/or other licensing conditions.

3.8 Other considerations

There is a very different approach to the licensing regime where the liberalization of the telecommunication market has been introduced. In some countries (Australia, Bhutan, Cambodia, Fiji, Indonesia, Iran, Korea, Pakistan, Sri Lanka, Thailand and United Arab Emirates) USO provision is not a necessary condition for newcomers to obtain a licence in the telecommunication market. On the other hand, in some countries it is necessary to accomplish USO to obtain a new licence, for example China, Kuwait, Lebanon, the Maldives and the Philippines. Where Universal Service Obligations have been introduced in the country's regulatory framework, open hearings, a consultative process which includes answering questions raised by Parliamentarians, and monitoring by regulators are in force or are in the process of being implemented.

Responses to the questionnaire on universal access/service – Asia-Pacific Region

Country	Definition	Obligation	If an operator does not have USO, is the operator obliged to contribute to the cost borne by another operator?	Do telecom operators have a choice of extending service to unserved customers or contribute to the cost borne by the dominant operators?	What does the universal service obligation include?	Is universal service obligation a condition to obtain a licence?
Australia	Provision of: <ul style="list-style-type: none"> • standard voice grade telephone service to all Australians on demand • reasonable access to pay phones to all Australians • range of disability-related equipment • access to a relay service for the hearing impaired • access to digital data service (equivalent to ISDN) to all Australians on demand 	Yes Currently the dominant operator but it may be legally imposed on any carrier	Yes	No	<ul style="list-style-type: none"> • Extending services to rural areas • Providing services to disadvantaged citizens • Provision of services to rural schools • Provision of services to rural hospitals or healthcare centres 	No
Bhutan	None	Yes The dominant operator	None Bhutan has one operator who has to provide services throughout the country	-	<ul style="list-style-type: none"> • Extending services to rural areas 	No
Cambodia	Currently none. Will be introduced in the new legislation	Yes All telecommunication operators	Yes	Yes	<ul style="list-style-type: none"> • Extending services to rural areas 	No
China	None	Yes <ul style="list-style-type: none"> • dominant telecom operator • cellular radio operator 	Currently under study	Currently under study	Currently under study	Yes
Fiji	None	None Rural teledensity target considered to provide one telephone in every village	No	No	<ul style="list-style-type: none"> • Extending services to rural areas 	Yes
Indonesia	Yes Universal Service is the Provision of telecom network by telecom network operators so that public needs in remote or left behind areas of telephony access can be fulfilled	Yes	All telecommunication operators	No	<ul style="list-style-type: none"> • Extending to rural areas • Provision of services to rural schools • Provision of services to rural hospitals or healthcare centres 	No
Islamic Republic of Iran	Providing telephone services to all villages with more than 100 population	Yes The dominant telecom operator	-	Yes	<ul style="list-style-type: none"> • Extending services to rural areas 	No

Responses to the questionnaire on universal access/service – Asia-Pacific Region (cont.)

Country	Definition	Obligation	If an operator does not have USO, is the operator obliged to contribute to the cost borne by another operator?	Do telecom operators have a choice of extending service to unserved customers or contribute to the cost borne by the dominant operators?	What does the universal service obligation include?	Is universal service obligation a condition to obtain a licence?
Kuwait	Basic telephony service	Yes	No	No	<ul style="list-style-type: none"> • Extending services to rural areas • Providing services to disadvantaged citizens • Provision of services to rural schools • Provision of services to rural hospitals or healthcare centres 	Yes
Lebanon	Currently none. Will be introduced in the new legislation	Yes <ul style="list-style-type: none"> • dominant operator • cellular radio operators 	No	Yes	<ul style="list-style-type: none"> • Extending services to rural areas • Providing services to disadvantaged citizens • Provision of services to rural schools • Provision of services to rural hospitals or healthcare centres 	No
Malaysia	To promote the wide spread availability and usage of network services/application services throughout Malaysia by encouraging the installation of network facilities or provision of network services/application services in underserved areas and underserved groups within the community.	Yes <ul style="list-style-type: none"> • dominant telecommunication operators • all telecommunication operators • cellular radio operator 	No	Yes	<ul style="list-style-type: none"> • Extending services to rural areas • Providing services to disadvantaged citizens • Provision of services to rural schools • Provision of services to rural hospitals or healthcare centres 	Yes
Maldives	Provide at least a connection to all inhabited islands	Yes <ul style="list-style-type: none"> • dominant telecom operator 	Yes	No	<ul style="list-style-type: none"> • To give access to all inhabited islands 	Yes
Pakistan	A minimum set of services of specified quality which is available to all users independent of their geographical location at an affordable price.	Yes <ul style="list-style-type: none"> • dominant telecom operator • all telecom operators • cellular radio operators • satellite service providers • card payphone operators 	No	No	<ul style="list-style-type: none"> • Extending services to rural areas • Provision of services to rural schools • Provision of services to rural hospitals or healthcare centres 	No
Philippines	Availability in all urban and rural areas of a minimum set of telecommunication services which are reliable and affordable	Yes <ul style="list-style-type: none"> • dominant operator • cellular radio operators 	Yes	Yes	<ul style="list-style-type: none"> • Extending services to rural areas • Providing service to disadvantaged citizens 	Yes

Responses to the questionnaire on universal access/service – Asia-Pacific Region (end)

Country	Definition	Obligation	If an operator does not have USO, is the operator obliged to contribute to the cost borne by another operator	Do telecom operators have a choice of extending service to unserved customers or contribute to the cost borne by the dominant operators	What does the universal service obligation include?	Is universal service obligation a condition to obtain a licence
Republic of Korea	Basic telecommunication services provided to everybody with an affordable price anywhere in the country	Yes • all telecommunication operators	Yes	Yes	<ul style="list-style-type: none"> • Extending services to rural areas • Providing services to disadvantaged citizens 	Yes
Sri Lanka	Easy access to basic telecommunication facilities to all at affordable and reasonable prices	Yes The government of Sri Lanka	No	No	<ul style="list-style-type: none"> • Extending services to rural areas 	No
Thailand	National Telecom Commission will be set up at the end of year 2000; the primary object will be to define Universal Service and USO	Yes The dominant telecom operator	No	No	<ul style="list-style-type: none"> • Extending services to rural areas 	No
United Arab Emirates	None	Yes The dominant telecommunication operator	–	No	<ul style="list-style-type: none"> • Extending services to rural areas 	No

CHAPTER III

Case studies

1 Bulgaria

1.1 Introduction

1.1.1 Background

The development of telecommunications in the Republic of Bulgaria follows the worldwide trend towards demonopolization and liberalization of the communications market of networks and services. The establishment of the necessary political, legal and institutional framework is the fundamental prerequisite for realization of the main tasks of the sector – improvement of the quality and accessibility of the existing services and providing new services, necessary for the public, at affordable prices.

In order to fulfil these tasks, in 1998 the Government approved the document “Telecommunications Sector Policy of the Republic of Bulgaria”, which will be updated at the end of 2000. The Sector Policy defines and states the objectives and plans for short-, middle- and long-term development of telecommunications. One of the most important objectives is the provision of a universal telecommunication service.

1.1.2 Scope of universal service

Following the principle that each country has the right to determine the national scope, level (geographic coverage), quality parameters and affordability of prices of universal service in the short-term and middle-term, universal service in Bulgaria shall include the following minimum package of services:

- ordinary telephone service (local, long-distance and international) provided through the fixed telecommunication network;
- free use of the national emergency services (first aid, police, fire brigade and similar);
- access to the operator (for long-distance and international services);
- information on phone numbers of subscribers to the fixed telephone network, including directories;
- access to the ordinary telephone service through public coin-or card-operated (credit and phone cards) telephones, set up at convenient places all over the territory of the country, and including free access, i.e. without coins or card-usage, to the national emergency services;
- services under specific conditions for users with specific social needs and/or facilities (for ensuring the access to the service) for disabled subscribers;
- users’ access to published information referring to the prices of the services, the quality of services and the degree of fulfilling the commitments undertaken by the respective operator with respect to the quality of services.

1.1.3 Measures for providing universal service

In order to fulfil completely the obligation of providing universal service in Bulgaria, the following measures shall be undertaken:

- to issue an extensive document dealing with the provision of universal service;
- to create the necessary prerequisites for preparing the net costs for the provision of universal service;

- to develop a national scheme (up until 2002, which is the year of expiry of the exclusive rights of the incumbent operator) for financing universal service for economically unprofitable regions. The scheme should assess options for the participation of other operators in the financing and provision of the service;
- to start preparation of the mechanisms for financing universal service under the conditions of a free market.

1.2 Telecentres – a Bulgarian experience

1.2.1 Alternatives for providing universal service in rural and remote areas

The provision of universal service in urban areas is easier than its provision in rural and remote regions. In order to ensure technical access to telecommunication services across the whole territory of the country as well as to overcome the imbalance between urban and rural regions, telephone penetration requires the promotion of:

- projects for the implementation of alternative models for telephone systems based on new technologies;
- projects for the completion of the fixed network and for the development of other networks in the context of liberalization.

1.2.2 The first telecentre in Bulgaria and BTA (Bulgarian Telecentres Association)

In 1999, a pilot project was implemented in Bulgaria aiming at providing, by means of a telecentre, access for all citizens from the rural and remote areas to the information and communication services.

A private Bulgarian company took part in the realization of this project, supported by consultants from BT Telconsult in the framework of the PHARE programme.

The idea for building telecentres in rural and remote areas was accepted with great enthusiasm by the majority of the people. As a result, the Bulgarian Telecentres Association was created at the end of 1999. The main goal of the association is to provide of telecommunication and information services to the population in rural and remote areas. In this way, the possibilities of the people from rural regions should be balanced with those of city inhabitants. During the daily working hours of the new telecentre (0800 h to 2400 h) the following services are offered:

- public telephone;
- public e-mail;
- Internet access;
- facsimile services;
- copy services.

Certainly, meeting people's needs in communication and information services is of great importance but much more essential is the social effect which can be achieved.

There are various courses taking place in the telecentre, mainly for training students and unemployed people. This offers the possibility of improving people's qualifications leading to reduced unemployment in these areas and improved economical prosperity. The telecentre itself is an example of this, with 5 working places created.

Thus the telecentre is slowly turning into a cultural club for young people where it is possible to have an exchange of information and learning. This will lead in the future to raising the quality of life in this region. It will also give young people the opportunity of getting a better education and thus a better job similar to the young people in the big cities.

In the future, BTA's intention is to increase the number of services offered in the telecentres as follows:

- small firm accountancy;
- helping in preparing business plans;
- information concerning agricultural cooperation and farmers;
- tourist information;
- translating services;
- telemedicine services and e-commerce, etc.

1.2.3 Plans for further development of the telecentres in Bulgaria

The successful launch of the first telecentre encouraged BTA to create a plan for further development of telecentres in Bulgaria. The first step of this plan is building telecentres throughout the country in the bigger villages in rural areas with a population numbering between 10 000 and 30 000 (see map).



Building smaller satellite telecentres in the villages with a population up to 5 000 and situated around the big telecentres is foreseen as the next stage.

Thus these smaller telecentres would be connected with those created in the first stage. In this way the amount of information which can be obtained in a small telecentre would be increased without increasing the expenses made for providing this information. In the long run, the main task of BTA is to connect all telecentres in the country in one network.

1.2.4 Problems and solutions

In carrying out this idea various difficulties of different kinds could arise. One of the main problems is to find offices and to finance the necessary equipment and facilities. The initial investments which have to be made for building a telecentre for the first mentioned type are about USD 25 000 and for a telecentre from a satellite type are about USD 12 000. There are also some difficulties related to the technical security of the telecentre – providing leased lines and thus the necessary quality of the connections. Also, the current expenses cannot be ignored. Another problem is the lack of knowledge and ability of the people to cope with the new technologies as well as the difficulty of getting over the psychological barrier, which appears when people come into contact with them.

BTA is looking for different solutions to overcome these difficulties. By organizing a number of seminars, the association is aiming to make the idea popular and to find alternative forms of collaboration with governmental and non-governmental organizations. A form of collaboration is the establishment of joint ventures or other partnerships with telecommunication and computer companies for building the telecentres. Another possibility offered by BTA is the joint use of premises owned by the Bulgarian public postal operator and Bulgarian Telecommunication Company. In return, the association may employ postmen and telephone operators who shall perform two or more activities.

1.3 Conclusion

Having in mind that the telecentres are an unprofitable activity but with an enormous social effect, the BTA initiative for building telecentres in Bulgaria should be highly esteemed. That is why this initiative must be encouraged in order to better realize the idea of the association to establish a network of telecentres in the whole country.

We must emphasize that it is of great importance that the governmental institutions understand the role of telecentres as their social partner in providing people with different kinds of services as well as supporting their activities oriented towards education, healthcare and social policy. Full understanding of the problems and difficulties that BTA faces in the process of carrying out this initiative is the only way that these problems may be solved.

2 Burkina Faso

2.1 Introduction

Aware of the impact of the numerous technological innovations affecting telecommunications and of the worldwide trend towards liberalization of the sector, Burkina Faso has drawn up a policy statement for the telecommunication sector setting forth the major objectives and strategies to implement with a view to ensuring the harmonious development of telecommunications in Burkina Faso. The objectives of the policy statement are, *inter alia*:

- to enhance the telecommunication sector's contribution to the economic, social and cultural development of Burkina Faso;
- to have the sector contribute to land-use planning by expanding service penetration and facilitating accessibility for the inhabitants of rural areas;

- to safeguard strategic related interests in the telecommunication sector, including all aspects of safety of life and property in the event of disaster;
- to have the sector contribute to furthering the country's integration in subregional and regional groups.

In order to give itself the means of attaining the above-mentioned objectives, Burkina Faso carried out sweeping institutional reform of the sector, adopting Law No. 51/98/AN in December 1998 on telecommunication sector reform in Burkina Faso. The salient points of that law are:

- to promote telecommunication development in Burkina Faso by establishing an appropriate legal framework that takes account of the requirements of liberalization;
- to promote and enhance the role of telecommunications as a key instrument of economic, social and cultural development;
- to further the emergence and development of a competitive telecommunication sector, with a view to facilitating user access to new telecommunication services at the best possible price;
- to develop and improve public telecommunication service by expanding national coverage in basic telecommunication services;
- to safeguard user interests and public security in the telecommunication sector;
- to ensure universal service by providing basic services nationwide at reasonable prices.

Article 8 of the Law stipulates that the specific terms and conditions under which universal service is provided are to be set forth in a government decree. To meet that obligation, the Council of Ministers adopted a decree on the arrangements for implementing access to universal service in Burkina Faso.

2.2 Aim and scope of the decree

In accordance with Law 51/98/AN on telecommunication sector reform in Burkina Faso, the decree defines the arrangements governing the implementation of universal access by:

- defining the obligations of operators with regard to the provision of universal service;
- laying down the terms and conditions for expanding universal service coverage;
- creating a universal service fund aimed at furthering the development of telecommunication networks and services in areas where such development is not profitable;
- organizing financing of the fund by contributions from telecommunication operators and service providers and by other interested parties.

2.3 Arrangements governing the provision of access to universal service

The provision of universal telecommunication service consists in:

- providing anyone who so requests with a connection to a public telephone network, in his service area, at a reasonable price;
- in urban areas, providing at least one public access point meeting the standards set by the decree within a radius of 2 km at most of any built-up area;

- providing each rural community with at least one public access point meeting the standards set by the decree and offering it the possibility of servicing the town hall and a health centre;
- routing calls free-of-charge to the closest public emergency services (police or gendarmerie, fire station, emergency medical services);
- providing each village with at least one public access point.

2.3.1 Operators' obligations

Operators of public telephone networks are obliged to provide universal service in their service area. The specifications agreed between the telecommunication regulatory authority (ART) and each operator will define minimum service areas and the obligations arising from the provision of universal service.

2.3.2 Tariffs

Within their service area, public telephone network operators must apply the same tariffs, with no discrimination based on the geographical location of their customers.

2.4 Development of service areas

In order to identify the needs to be met, ART will establish and keep up to date an exhaustive list of the country's districts (*communes*) and villages, classifying them on the basis of the following criteria:

- network serving the entire territory of a commune or village;
- network serving only part of the territory of the commune or village;
- manual service only;
- service limited to the provision of public access points;
- no service available.

For each commune or village, ART will indicate the number of inhabitants, as established by the latest census, and the estimated number of inhabitants that benefit from network services or that have access via one or more public access points only. In order to plan the investment required to provide universal service, ART will establish, every year by 30 March at the latest, a list of the communes and villages that have no or only partial service. ART will evaluate the technical and economic feasibility of the projects to be carried out in the coming three years, or have such evaluations made, with a view to raising the necessary funds. The study will compare investment and operating costs in the new service areas, in those different situations, taking account of the technical options available.

The comparative studies should contain the following information for each type of service area:

- an evaluation of the volume and nature of demand (public access points, administrative, professional or residential lines, etc.);
- an evaluation of the most economical technologies;
- an outline of investment and operating costs and a minimum five-year financial forecast, taking into account the rate of return on capital at the time of the study;
- an evaluation of the amount of any initial subsidy required to guarantee the long-term financial stability of the project.

Once the evaluation of the projects to be carried out has been completed, ART will draw up a three-year plan for expanding the service areas considered, as follows:

- The service areas shown to be profitable in the studies will be included in the programme, the other service areas being included as resources become available or are set aside by the fund.
- The service areas to be included in the programme will be chosen by giving priority to those whose estimated net cost to the fund is lowest, so as to maximize the fund's impact. If a choice has to be made between several areas with the same estimated cost, priority will be given to new areas for the purpose of closing the gap between different parts of the country.

2.5 Financing of access to universal service

The decree created a universal access fund whose aim is to help finance the expansion of the telephone network to rural and urban areas whenever this can be done without subsidy. The fund is constituted from annual contributions from telecommunication operators and service providers subject to the interconnection system or authorization, calculated as a percentage of their turnover, and from subsidies from development partners.

2.6 Supervision of the implementation of universal access

ART is under the jurisdiction of the ministry in charge of telecommunications and is in charge of the technical organization and follow-up of implementation of the programme by invitations to tender from public telephone network operators. It reports on its activities to that end in the annual report of the universal service fund.

3 France

3.1 Definition and components of universal service

3.1.1 Definition

The law of 26 July 1996 asserts the principle that a public telecommunication service is to be maintained, and brings it in line with the objectives of competition.

The law defines universal service as the provision to everyone of a quality service at an affordable price. This includes free routing of emergency calls, the availability of a directory enquiries service and a directory in printed and electronic format, and public payphones nationwide. The law also prescribes tariff conditions and specific technologies adapted to those who find it difficult to have access to the telephone service because of disability or level of income.

3.1.2 Geographical correction

To calculate the projected costs of unprofitable areas, the telecommunication regulatory authority (*Autorité de régulation des télécommunications* – ART) uses a representation of France Telecom's network comprising 35 categories of local distribution areas classified according to their population density. The relevant costs and revenues were attributed to each category by applying accounting allocation rules²¹ to the projected data provided by France Telecom.

²¹ ART Decision No. 99-780 of 30 September 1999 specifies the accounting allocation rules to be used with regard to the costs and revenues to be considered in evaluating the net cost of unprofitable areas and of subscribers in profitable areas that would not be served by an operator acting in market conditions.

The model reflects the behaviour of an operator developing the network from the most profitable areas, which are assumed to be those with the highest population density. For each category of local area, a net cost appears as soon as the additional cost incurred by the operator to serve that category of local area is higher than the direct and indirect revenues obtained.

In 2000, the unprofitable areas account for 478 000 subscribers in areas of fewer than 21.5 inhabitants per km². The number of subscribers in those areas was determined by France Telecom's observations and not by statistical estimates.

3.1.3 Payphones

France Telecom's obligations in terms of payphones are laid down in its specifications. It is obliged to install one payphone in every district (*commune*) of fewer than 1 000 inhabitants, with one additional payphone for every additional 1 500 inhabitants, up to 10 000. For communes of over 10 000 inhabitants, however, France Telecom's only obligation is to make available to the inhabitants at least one public payphone. In communes with fewer than 2 000 inhabitants, France Telecom must have the mayor's approval to eliminate a payphone.

3.1.4 Social tariffs

A March 1999 decree determines the new terms and conditions governing social tariffs. Publication of the decree enables universal service to be fully effective for the benefit of the consumers, in particular the most vulnerable among them. The decree provides for:

- A discount on the telephone bill for recipients of the minimum social security allocation (*revenue minimum d'insertion* – RMI), the specific solidarity allocation, or the disabled adult allocation (AAH), the monthly amount of said discount being equal at the most to half the reference subscription, i.e. FRF 32.50 exclusive of tax (excl. tax) or FRF 39.19 inclusive of tax (incl. tax).
- Clearance of telephone debts by the operators. The type of expense covered includes the subscription to the fixed telephone service and national calls to fixed-telephone service subscribers. The decision to clear a debt is taken by the prefect of the department in which the applicant resides, on the advice of a commission.

The discount measures took effect on 1 July 2000. The monthly discount decided by the ministry in charge of telecommunications is FRF 33 incl. tax for 2000. The debit-clearance measures have been gradually introduced in most French departments since the last quarter of 1999.

The cost of those measures is met from the universal service fund. The cost in question is equal to the tariff discount granted plus the associated administrative costs incurred by the managing bodies, and the amount of debt cleared. The overall cost of the measures shall not exceed 0.8 per cent of telephone service turnover, of which 0.15 per cent for the clearance of telephone debts.

The posts and telecommunication code provides that any operator can offer specific tariffs and receive compensation from the universal service fund for the net costs entailed. At present, two operators offer social tariffs:

- France Telecom offers eligible persons a reduction in their subscription equal to the amount of the tariff discount decided by the Ministry for 2000, i.e. FRF 33 incl. tax. The eligible person benefits from the offer for 12 consecutive months whether his situation changes or not.

- Kertel offers eligible persons a consumer credit of FRF 40 incl. tax (the FRF 33 provided for in the ministerial decree plus a “bonus” of FRF 7 per month aimed at compensating the higher cost of local calls) valid on all national and international calls (except those to mobile phones).

3.1.5 Universal service and public service

Universal service is one of the three components of the public telecommunication service. The law specifies that the public telecommunication service is provided with due respect for the principles of equality, continuity and adaptability, and that it has three components:

- universal telecommunication service;
- obligatory telecommunication services, comprising nationwide access to the integrated services digital network, leased lines, packet-switched data, the telex service and advanced voice telephony services;
- missions of overall public interest in the telecommunication field – for defence, security, public research and higher education.

3.2 Cost and financing of universal service

3.2.1 Cost of universal service

The law provides that the costs of universal service obligations be equitably shared and funded by all telecommunication operators and financed in proportion to their traffic.

The cost of universal service has five components:

- the cost arising from the imbalance in France Telecom’s current tariff structure: this component was transitional, covering the period during which France Telecom’s tariffs were being rebalanced. It ceased to exist on 1 January 2000. Mobile operators were exempt in exchange for undertakings in terms of geographical coverage;
- the cost of geographical correction, i.e. that arising from covering the territory in such a way that all subscribers anywhere have access to telephone services at the same price;
- social tariffs – the expense arising from the obligation to provide special tariffs for certain categories of people because of their low income or disability;
- providing payphones nationwide;
- the directory and corresponding information service.

The cost of universal service is defined as the net cost borne by the operator required to provide universal service as a result of its obligation to provide such service. The operator’s accounts must therefore be analysed with a view to assessing the difference between two situations:

- a situation in which the operator is not required to fulfil the universal service obligation and consequently acts in accordance with strictly business principles;
- a situation in which the operator fulfils its universal service obligations.

The operator in the second situation usually bears higher costs than that in the first. It has to serve, for example, territories or users in which it would not have been interested from the business point of view. However, it benefits from higher revenues than in the first case. The economic calculation has to take account of the net balance between the additional costs borne and the additional revenues obtained. This is a complex calculation in that it calls on a reference situation, that of an operator who is purely business motivated, which is by definition hypothetical.

Cost of universal service	1997	1998	1999	2000
Cost components	Cost (million French francs)	Cost (million French francs)	Cost (million French francs)	Cost (million French francs)
Tariff imbalance	1 824	2 028	16	0
Geographical correction (unprofitable areas and subscribers)	2 736	2 159 (1 295 + 864)	1 550 (1 444 + 206)	1 446 (1 288 + 158)
Payphones	0	187	189	165
Social tariffs	456	0	1 105	1 211
Directory and information service	0	0	0	0
Total	5 016	4 374	2 860	2 822

The costs for 1997 and 1998 are final. For 1999 and 2000, they are estimates.

3.2.2 Financing universal service

3.2.2.1 Method of financing

Until 31 December 1999, there were two methods of financing running concurrently. Operators contributed by paying a surcharge on the interconnection fee, and by making payments to the universal service fund. During this transitional period, the cost of the first two components (France Telecom tariff imbalance and geographical correction) was covered by the surcharge on interconnection tariffs. The cost of the last three components resulted in payments to a fund managed by the *Caisse des dépôts et consignations* (CDC), which CDC then transferred to France Telecom, as the entity responsible for providing universal service.

Since 1 January 2000, operators have contributed to the costs of universal service by making payments to the universal service fund.

	Financing until 31 December 1999	Financing since 1 January 2000
Tariff imbalance	Surcharge on interconnection	None
Geographical correction	Surcharge on interconnection	Universal service fund
Payphones, social tariffs, directory and information service	Universal service fund	Universal service fund

3.2.2.2 The universal service fund

Until 31 December 1999, the universal service fund financed the following three components: payphones, directory and information services and social tariffs. Starting on 1 January 2000, the fund has also been used to finance the cost of geographical correction.

ART, together with CDC, established the technical arrangements for management of the fund, which were endorsed by the Ministry. The universal service fund and its management committee were established in 1997. The committee's mission is to supervise the fund and in particular to approve the amount set aside to cover the costs of its administration. The fund's administration costs are, like the contributions to the cost of universal service, shared out among the operators. In 1999 they amounted to FRF 125 000 excl. tax.

The operators pay their projected contribution to the universal service fund in three instalments on set dates, namely 20 January, 20 April and 20 September of each year. The following year, when the final cost has been assessed, the final amounts due are adjusted at the latest on 20 December.

3.2.2.3 Sharing the cost of geographical correction

Since 1 January 2000, the cost of geographical correction obligations (C_2) has been financed by the universal service fund. Each operator's contribution to the fund is in proportion to its volume of outgoing and incoming traffic on all the terminals connected to its public networks.

The volume of telephone traffic is defined as the telephone traffic billed by or on behalf of the operators. After having examined the views of a number of operators, ART specifically decided to charge fixed-to-mobile traffic to the fixed operator.

3.2.2.4 Sharing the cost of providing social tariffs, payphones nationwide, the directory and the information service

The cost of providing social tariffs, payphones, the directory and the information service (C_3) is financed by public network operators and telephone service providers in the form of contributions to the universal service fund.

Each operator's contribution is in proportion to its volume of traffic.

3.2.2.5 Calculating an operator's contribution

The net contribution of an operator with a volume of incoming and outgoing subscriber traffic (V_b) and a volume of invoiced telephone traffic (V_f) is therefore equal to:

$$C_2 * \frac{V_f}{V} + C_3 * \frac{V_b}{V'}$$

where:

- C_2 is the cost of geographical correction;
- C_3 is the cost of social tariff components, payphones, the directory and the information service;
- V and V' are equal to the sum of V_f and V_b traffic, respectively, of all operators;
- less, as the case may be, the cost of providing any universal services.

Some of the CDC's running costs are also added to the contribution. The running costs are shared among the operators, each operator's share being in proportion to the amount of its contribution.

4 Niger

4.1 General

The Republic of the Niger is a West African country with a surface area of 1 267 000 km². It is completely landlocked, being bordered in the west by Burkina Faso and Mali, in the north by Algeria and Libya, in the east by Chad and in the south by Nigeria and Benin.

Niger can be divided into three geographical regions:

- the highlands of Niger (Air and the high north-eastern plateau);
- the lowlands of the Sahara (Ténéré and Talak);
- the southern plateaux (the valley of the River Niger in the west, Ader and Tegam in the centre, and Manga and Damagaran in the east).

The country has only one perennial river, the River Niger, which is the third largest river in Africa (4200 km). It crosses the western part of the Republic of the Niger for about 500 km. A few perennial lakes are also to be found, the largest of which, Lake Chad, is located at the south-eastern tip, and there are several semi-perennial rivers, including the Niger's tributaries on its right bank in the west and the Komadougou Yobé in the southeast.

There are three distinct seasons in Niger: the hot season from March to June (maximum 43 °C, minimum 22 °C), the wet season from July to October (38 °C/23 °C), and the cool season from November to February (38 °C/14 °C).

4.2 Infrastructure

In comparison with the other countries of the subregion, Niger has a relatively well-developed infrastructure. The country is endowed with approximately 22 000 km of roads, of which 3 500 km are asphalted. International air transport is provided by five companies: Air France, Air Afrique, Ethiopian Airlines, Air Algérie and Royal Air Maroc. Two further companies, Niger Air Service and Nigeravia, provide a service within the subregion. There are three international airports, at Niamey, Zinder and Agadez, and some 20 domestic airports, more than half of which have tarmac runways. Domestic and subregional air transport is provided by such companies as Niger Air Service, Nouvelles Frontières, Air Inter Niger and Nigeravia.

Niger has no railways, and all imports and exports have to be transported by lorry or plane. Rail transport does however exist from the port of Cotonou (Benin) to Parakou, not far from the border with Niger, and also from the port of Abidjan (Côte d'Ivoire) to Burkina Faso. Niger is a co-founder of the Benin-Niger railway and transport organization. This organization, which currently only deals with operations in Benin, is due to develop railway services from the coastal region of Cotonou to Dosso in Niger, and thereafter to Niamey.

Electricity is supplied by two distribution systems. The western/southern network links Niamey to Nigeria and is supplied by the Kandji Dam on the River Niger. The northern network serves the mining centres of Arlit and the town of Agadez, and is supplied by the Anou-Araren coal-fired power station.

Average energy costs depend on voltage and use. In February 1999 the following costs were calculated for long-term use:

- high voltage 49.50 CFAF/kWh;
- medium voltage 54.57 CFAF/ kWh;
- low voltage 70.71 CFAF/ kWh.

4.3 Telecommunications

The national and international telecommunication network is modern and includes satellite and microwave broadcasting systems.

The town of Maradi and some parts of Niamey have recently been digitized, and five localities are connected via a DOMSAT system. An X.25 service (NigerPac) is also available.

Local telephone and telegraph communications are operational. Automatic telephone calling is possible to many countries, including the countries of Europe, the United States and some African and Asian countries.

The telephone subscription fee charged by SONITEL is around 55 000 CFAF (including a deposit of 15 000 CFAF (returnable upon termination of the subscription) in fully urbanized areas and 70 000 CFAF for other areas. The cost of a local call is 75 CFAF for six minutes, i.e. approximately USD 1.30 per hour.

Telephone, telex and television coverage of the national territory is provided, *inter alia*, by five domestic earth stations, while international links are provided by two earth stations located at Niamey.

4.3.1 Telecommunication development projects

The specifications which will be adopted by SONITEL upon its privatization will set out a precise timetable for digitization of the national network, including [coverage of each of the country's departmental administrative centres (the main town in each *département*)] by the end of 2004.

This upgrading of the network will allow, within a framework that facilitates interconnectivity, for the rapid deployment of GSM networks throughout the country. This geographical development of the national network, together with the establishment by GSM operators of their own infrastructures, will give those operators the opportunity to tap into new customer groups and increase their market shares.

Under the terms of Ordinance No. 99-045 and its regulatory texts, GSM licence holders must contribute to the charges arising from universal access to telecommunication services.

This contribution is set at a fixed rate of four per cent of pre-tax turnover.

- On a transitional basis, for the period 1999-2004 inclusive, SONITEL will contribute 1.5 per cent of its annual pre-tax turnover.
- From 2005 onwards, all operators will contribute four per cent (including SONITEL).

4.4 Exclusivity for SONITEL services

The transitional period of exclusivity should enable SONITEL to make the necessary investments and adjustments before new operators enter the marketplace. SONITEL will maintain a transitional monopoly on the installation and operation of fixed networks and on access to international services until the end of 2004. This exclusivity will not include areas not served by SONITEL.

During the transitional period of exclusivity, SONITEL's prices to the public for services under monopoly will be subject to tariff regulation by means of price caps. The initial period of exclusivity will enable tariffs to be rebalanced, thereby permitting the gradual elimination of cross-subsidies between international telecommunication services and local and national long-distance telecommunication services. The objective for this period will be to achieve price levels that are comparable to those prevailing in other countries of the subregion.

a) *Improvement of telephone density and public access*

SONITEL is required to have at least 77 000 main lines (ML) connected to its network by 31 December 2004.

Additionally, SONITEL is required to have installed at least 3 000 public telephones (public payphones, phone booths or telephones installed in telecentres) by 31 December 2004.

These overall objectives are distributed as annual targets, as shown in the table below:

Year	2000	2001	2002	2003	2004
Minimum number of ML by end of year		30 000	45 000	63 000	77 000
Minimum number of public telephones by end of year		350	1 000	2 000	3 000

b) *Improvement of service provision countrywide*

SONITEL is required to provide the following by 31 December 2004:

- Provision of automatic service to the localities appearing in the list with which it will be provided, with equipment that ensures a good quality of service.
- Replacement of the existing analogue transmission and switching equipment with equipment based on digital technology (unless more modern and efficient technology that complies with ITU standards becomes available).
- Provision of interconnection with telephone network operators at all its switching centres with autonomous routing, and at least in the towns of Agadez, Diffa, Dosso, Maradi, Tahoua, Tillabéri and Zinder.

The automation and digitization of the main departmental towns and districts (the localities in italics in the following table) must be completed by 31 December 2002 at the latest.

Table – List of localities currently served

Regions	Automatic service	Manual service
Niamey	<i>Niamey</i>	
Agadez	<i>Agadez, Arlit</i>	Iférouane, Timia, <i>Bilma, Tchirozérine</i> , Elmecki, Tarouadji, <i>Ingall</i>
Diffa	<i>Diffa</i>	Chétimari, Tounour, Gueskérou, Bosso, Baroua, <i>Mainé-Soroa</i> , Goudoumaria, <i>N'Guigmi</i>
Dosso	<i>Dosso, Dogondoutchi, Gaya</i>	<i>Birni N'Gaouré</i> , Falmeye, <i>Harkanassou, Tchiota, Koygolo, Yéni</i> , Guéchémé, Matankari, <i>Tibiri-Doutchi</i> , Koré-Mairoua, Gaya, Dioundiou, <i>Loga</i> , Sokorbé
Maradi	<i>Maradi, Tessaoua</i>	<i>Aguié</i> , Gazaoua, Tchadoua, <i>Dakoro, Guidan-Roundji</i> , Tibiri, Maradi, <i>Madarounfa, Dan-Issa</i> , Mayahi, Kanam Bakéché, Tessaoua
Tahoua	<i>Tahoua, Madaoua, Birni, N'Konni</i>	Doguéraoua, <i>Malbaza</i> , Tsernaoua, Guidan Ider, Galmi, Bouza, <i>Illéla, Badaguichiri, Keita</i> , Tamaské, <i>Tchintabaraden, Tillia</i> , Abalak
Tillabéri	<i>Tillabéri, Filingué, Kollo, Say</i>	Ayérou, Famalé, Ballayera, Bonkoukou, Damana, Tabla, Fandou, Dantiandou, Hamdallaye, Karma-Sondhaï, Kouré, Bani Bangou, <i>Ouallam, Tamou, Tapoa</i> , Torodi, Gotchèye, Téra
Zinder	<i>Zinder, Myrriah, Tanout</i>	<i>Gouré</i> , Guidiguir, <i>Magaria</i> , Bandé, <i>Wacha, Matameye</i> , Kantché, <i>Takeita, Guidimouni, Dogo, Damagaram Takaya</i>

SONITEL is required to install at least one public phone booth or telecentre, with around-the-clock access, in each locality where it is the service provider.

SONITEL is required to give priority to the connection to its network of public phone booths or telecentres installed by private operators in those localities where it is the service provider.

4.5 Opening up of isolated regions

One of the priorities of the Niger authorities is to establish a national network which covers virtually the whole territory. The under-equipment of rural areas, together with the obsolescence of the equipment currently in use there, means that considerable investment is called for. However, the potential for national subsidization is limited in a country where the GDP per inhabitant is one of the lowest in sub-Saharan Africa.

The fixed telephone network is at its most highly developed in and around Niamey, Niger's capital. This area accounts for over 65 per cent of national connections.

Eighty-four per cent of the population lives in rural areas. The rural nature of the country makes extension of the fixed telephone network to the whole territory a necessity. Of over 10 000 rural communities, only some 60 are currently served.

Ninety-four per cent of the combined populations of the departments of Dosso, Maradi, Tillabéry, Zinder and Tahoua is served by 32.6 per cent of the country's total fixed telephony capacity. Thus, almost the entire population accounts for only 26 per cent of the used fixed telephony capacity.

Rural telephony features significantly in telecommunication network development policy owing to the large number of small communities in Niger (population density per km² = 8). Numerous projects have been studied since the end of the 1980s with a view to redressing this imbalance.

The development objective of rural areas involves the installation, over the long term, of public telephones according to the following criteria: in areas with over 2 000 inhabitants, one public telephone for each area within five years; in areas with over 1 000 inhabitants, one public telephone for each area within ten years.

4.6 Status of the telecommunication sector reform process

a) Government objectives

The reform process undertaken by the Government aims to develop a modern and efficient telecommunication system which can keep pace with the rapid evolution of this sector at the international level. The main objectives of this process are as follows:

- to accelerate development of the telecommunication sector and extend the coverage provided by the current network;
- to increase overall performance in the sector by modernizing the network and expanding the range of services offered;
- to bring about a reduction in telecommunication tariffs.

b) Legal framework of the telecommunication sector

The telecommunication sector in Niger is regulated by Ordinance No. 99-045 of 26 October 1999.

The following is a chronology of the legal events which have led to the current structure of the sector:

- Establishment by the State, by Decree No. 96-95/PCSN/MCCJ/S of 16 April 1996, of the *Direction de la réglementation des Postes et Télécommunications*, the role of which is to contribute to the formulation of development policy, to the development and application of the regulations, to regulation of the postal and telecommunication sectors and to frequency management, and to liaise with international, national and regional institutions and organizations and supervise public operators.
- Establishment by the State, by Ordinance No. 96-028 of 6 June 1996, of the *Office national de la poste et de l'épargne* (ONPE) (national post and savings office), which is the public operator with the postal monopoly in Niger.

4.7 Universal access/service

a) Sector policy

- **The development of access in rural and semi-urban areas**

Through its reform process, the Government intends to conduct an accelerated policy of accessibility on a national level. The new operators and SONITEL are required to contribute to this priority objective within the new legal and regulatory framework. To that end, service obligations will be included in those operators' terms of reference.

Moreover, the Government intends to expedite the implementation of new initiatives. Telecentres and community information centres have proved successful in many countries. The Government now intends to take full advantage of those experiences to develop a rural strategy and specific action plan in line with the geographical and cultural characteristics of Niger, so that all of its citizens can have access to information.

Furthermore, all operators and authorized telecommunication service networks will pay a fee, calculated according to their turnover, into a telecommunication development fund. This fund will be used to finance universal access. Subsidies taken from the fund will be allocated to interested operators on a competitive basis.

b) Ordinance on telecommunications (No. 99-045 of 26 October 1999)

- **Guidelines**

The guidelines and priorities for universal access to services are determined by decree, with definition of, *inter alia*:

- 1) the services concerned;
- 2) the minimum level of service;
- 3) the minimum quality of service;
- 4) the rules governing determination of the costs of universal access to services and procedures for contribution by operators;
- 5) the provisions governing compensation in respect of universal service obligations.

- **Implementation**

The regulatory authority defines the most appropriate arrangements for selecting the operators that will provide universal access to services. Those operators must provide evidence that they have the financial and technical capacity to provide such services.

- **Financing**

The Ordinance establishes a universal service access fund, which is managed by the regulatory authority and is intended to provide compensation for universal service obligations.

The source of the contributions to the fund, the criteria for disbursements and the accounting and financial management arrangements will be stipulated in a decree.

- **Costs pertaining to universal access to services**

The costs attributable to universal service obligations are evaluated by the regulatory authority on the basis of an annual programme which it establishes.

c) Telecommunication master plan (1991-2010)

Rural service provision: (85 per cent of the population is rural)

- 10 188 villages of widely varying sizes and descriptions;
- 4.5 per cent of the population is nomadic;
- 35 districts and several administrative centres;
- some 200 cantons comprising several villages.

d) GSM operators

The new legal framework for telecommunications in Niger at last specifies the concept of universal service and sets out the procedures for implementation and financing of the services provided under the heading of universal service.

All operators, including GSM cellular telecommunication network and service operators, participate in the financing of a special fund for universal service, which is managed by the regulatory authority.

A fee amounting to four per cent of their turnover is paid into the fund annually. Universal service provision costs incurred by operators are deducted from their contribution to the fund. Finally, the regulatory authority assigns, by calling for tenders, universal service provision tasks to the selected operators, which are remunerated from the fund for the financing of universal service.

5 Samoa

5.1 Institutional set-up

The Government of Samoa, by means of the Postal and Telecommunications Services Act 1999, and in pursuance of its reform agenda, converted the old Post Office Department into a threefold structure comprising:

- 1) The Ministry of Posts and Telecommunications, a separate government department charged with the administration of the Act and with the development of an efficient and commercially viable communications policy for Samoa;
- 2) the establishment of a body corporate to be the licensed provider of postal and telecommunication services in Samoa. This body corporate became known as the Samoa Communications Ltd, a public company fully owned by government; and
- 3) the establishment of a Spectrum Management Agency responsible for the orderly and efficient operation of the telecommunications spectrum including the use of frequency bands and all forms of radio transmissions and emissions.

Within the ambit of the Postal and Telecommunications Services Act 1999, and in pursuance of current thinking and policy of government, the setting up of an independent regulator for the sector is currently being looked at.

5.2 The Ministry of Posts and Telecommunications

The Ministry is manned by a staff of professionals and assistants with a support staff headed by the director, who is the administrative head of the Ministry. Although legally formed on 1 July 1999, the Ministry was not able to recruit its professional staff until late March 2000. There is a need for staff with technical background in telecommunications. Other professional expertise is now available in the current staff in disciplines such as law, planning, research and general public policy development. The current staff, however, still needs to acquire basic knowledge of technical terminology necessary for policy development.

Understandably, a major problem for the staff is orientating with the technical terminology, and the requirements of the sector both within and outside Samoa. The availability of ITU and other relevant reading materials on the Internet has been of great help. It was only in June 2000 that TIES Access was activated for the Ministry and has since been used regularly to access relevant ITU information. Nevertheless, there are important materials considered essential for the Ministry's work but are available only through the buying service. The Ministry needs to purchase these, but given its budgetary limitations, these important resources are difficult to obtain at the moment.

Development of human resources is an area to be addressed. Short-term courses or exposure to other forums on technical aspects of telecommunication policy work would be appropriate for the staff to undertake. This would provide the background knowledge needed for consideration of policy issues.

5.3 Development of the sector policy

By April 2000, the Ministry of Posts and Telecommunications had developed a draft Sector Policy, using a consultative approach with a Task Force appointed by Cabinet. The Task Force consisted largely of service providers, but there were also public servants representing various related government departments.

The draft policy was reviewed by another task force, smaller in size, and consisting of the Treasury department, the Attorney General, the Government employer (PSC), Samoa Communications Ltd (the major service provider) and the Ministry. The product of this review is now before Cabinet for consideration.

5.4 Current problems facing the Ministry

The Ministry cannot proceed with its major functions without the sector policy, which the Cabinet is still to finalize. These tasks include:

- i) Reviewing existing legislation to ensure conformity and harmony with the Sector Policy;
- ii) streamlining administrative procedures in respect of licence applications;
- iii) monitor operations of Postal and Telecommunications services efficiently;
- iv) monitor policy implementation effectively;
- v) training of human resources;
- vi) engage in effective consultation with service providers and stakeholders concerning role of Ministry.

There is urgency in finalizing the Communication Sector Policy so that the Ministry may effectively carry out its functions.

Recruitment of qualified personnel for the Spectrum Management Agency is also an urgent necessity. Pending the recruitment of staff for the Agency, the Ministry is carrying out research and other clerical work for the Minister's consideration before licences for the issue of frequencies are approved. There is limited scope in the Spectrum Management work now being carried out by the Ministry due to the lack of additional spectrum management expertise.

There seems to be a general consensus amongst stakeholders for a regulator that is independent and honest. It is the Ministry's view that, given the following issues, perhaps it is better for Samoa that the regulator remains with the Ministry meantime.

- Samoa has just started the reform process, and there is only one major service provider.
- The structural framework for the sector has not totally been put into place.
- The question of funds is a recurring one for government, so the setting up of a regulator now may not be economically justified.

There is a need to amend and develop further the existing legislation to ensure compatibility and consistency. There is also related legislation which needs to be amalgamated into one simplified Act of Parliament to avoid confusion and contradiction.

5.5 Interconnection and the Universal Service Obligation (USO)

While the government has encouraged the introduction and development of competition in service delivery, it is also obligated to ensure that the new company, Samoa Communications Ltd (SCL) is able to operate financially, produce quality service to the consumers, and to pay dividends to government. The new company however, has inherited problems which existed under the old government set-up. These problems are currently having some effect on the company's ability to operate effectively. This has in turn affected the government's decision to grant the new company an exclusive licence as the main provider of postal and telecommunication services for the next 10 years.

The exclusive licence granted to SCL effectively limits the introduction of competition, and hence interconnection in telecommunication services provision. Other service providers in the telecommunication sector mainly deal with providing telecommunication equipment, connecting internal networking and providing domestic/internal wiring/cabling services.

Universal Service has not been formally defined and is yet to be finalized between the new corporation and government. Samoa Communications Ltd (SCL) and government are obligated to review the company's Statement of Corporate Objectives every year, and ensure that services are provided within a given price range, at a prescribed quality level. In the event that the new company is not able to provide such services as required, then the government is obligated to take other options which may include the tender out of such work to other possible providers who may be able to deliver services at prescribed conditions. Currently, the Ministry, Treasury and SCL are working on the Statement of corporate objectives for the company, hence the Universal Service Obligation is yet to be finalized.

5.6 Plans for the future

The Ministry is planning to host a number of workshops to allow consultation on issues raised above. These include obtaining public input in defining universal service and assessing the performance of the sector, as well as assessing the need for more advanced technology. They also include consultation with service providers to inform them of the new set-up, and their obligations regarding their licences and performance under the new framework. The number and coverage of such workshops will depend on the ability of the department's budget to fund these activities.

Consultations are ongoing between the Ministry and other key government departments such as Treasury and the Attorney General's Office on issues affecting the sector policy, corporate objectives of SCL, and legislative review.

6 Sri Lanka

The Asia-Pacific Declaration recommendation on network development addresses universal access to "provide at least the basic telephone services within easy reach of the people". In any country people have a right to communicate and the telephone has become very important to their daily lives. Therefore the objectives of governments and regulators should be to ensure that public has access to basic telecommunications at reasonable costs. The Government of Sri Lanka has voiced its concerns in this sphere through the National Policy on Telecommunications in September 1994.

One of its objectives is to achieve universal service, covering the whole country including all villages. This implies easy access to basic telecommunication facilities such as the telephone, telegraph and facsimile to all at affordable and reasonable prices.

Another objective is to provide prompt and effective attention to consumer needs and to attain an acceptable quality of service for voice and data communications for both national and international communications.

Sri Lanka telecommunication policies have been continuously changing during the past few years, with the bifurcation of telecommunications and postal services in 1980, and in 1991 the PTO was corporatized and regulation was introduced in the form of a single regulator. In 1996, by the Amendment Act No. 27 of 1996, the Telecommunications Authority of the single regulator was converted into a Regulatory Commission which is a statutory body, with five Commissioners with greater financial autonomy and administrative flexibility. Competition in the area of fixed-line access was introduced in 1996 with the licensing of two wireless local loop operators. This resulted in foreign investment in the country.

In the year 1997, the Government of Sri Lanka sold 35% of the shares of the Sri Lanka Telecom which was the Government-owned PTO to the NTT Corporation of Japan. Thus the management of Sri Lanka Telecom Ltd was vested with the NTT of Japan subject to certain performance incentives which include incentives to encourage increases in the network with emphasis on rural and regional increases. *Vide* the Agreement for Provision of Services and Procurement of Personnel entered into between Sri Lanka Telecom Ltd and NTT of Japan Schedule 2 'FEES'.

There are no formal universal service obligations imposed on Sri Lanka Telecom Ltd which is the incumbent operator as it was expressly excluded by the Management Agreement between the Government of Sri Lanka, NTT and Sri Lanka Telecom Ltd until year 2000.

At present, less than 10% of the households have fixed telephones. Even under most optimistic scenarios, the majority of households will not have access in the short term. The Government of Sri Lanka was of the view that public or pay-telephones will therefore be a critical mechanism for accessing the network. On the request of Her Excellency the President of the Democratic Socialist Republic of Sri Lanka, the Minister of Posts, Telecommunications and the Media requested the Commission to create incentives for the roll-out of the payphones in the rural areas. Sri Lanka's current teledensity for payphones is 0.22 per 1 000 people.

As the installation and servicing costs of payphones in rural areas are relatively higher, the payphone operators are reluctant to roll-out payphones in these areas. A wire line connection costs as much as LKR 50 000 (roupies) in the outstations compared to LKR 13 000 in Colombo. Operational costs are also very high.

The Commission, on the request made by the Government, paid a subsidy of LKR 50 000 per incremental payphone installed subject to certain conditions such as the payphone shall be located outside municipal and urban council limits, payphone cards to be available within a radius of 250 metres of the payphone for at least 45 hours a week and the public should be able to gain unhindered access to the payphones 24 hours a the day. This subsidy is limited to the first 3 000 payphones installed.

It is also pertinent to take note that the present fixed access teledensity is 3.63 (telephones per 100 people) and that 70% of the country's fixed access telephones are located in the Western Province, 60% of which are in Colombo (commercial capital of Sri Lanka). Therefore the rural areas were unserved.

The incumbent operator is also providing public payphones on a nationwide basis but at present they do not have adequate payphones to make them accessible to the majority of the Sri Lankan public. In this regard, the Regulatory Commission and the incumbent operator have reached an agreement on certain aspects relating to payphones such as priority fault clearance, etc. Although there is no formal obligation on the incumbent operator with regard to universal access/service, the country's legislation and the regulatory obligation cover methods of implementing universal service obligations. It is an informal obligation on the part of the incumbent operator to be answerable to Parliament when questions are being asked by politicians, on issues relating to telephone services in the areas they represent. It is an inherent condition in the Management Agreement to serve the regional and rural areas.

The wireless local loop (WLLs) operators are expected to provide 100 000 lines by year 2000. As there are no formal universal service obligations until August 2002, the incumbent operator is only committed for provision of services within the telecommunication legislation. It is important to note that in the licences granted to the WLL operators it is specifically provided that the number of licences granted to provide basic fixed telephony, exclusively using WLL technology, is restricted to two until end of year 2000, but where the operator provides good service, the restriction in the granting of licences as aforesaid will be extended until year 2005. For this purpose the WLL operators will have to fulfil the following conditions:

- a) Call completion rate (portion of call attempts with an answer) within the licensed system shall continuously be above 50% and the number of subscribers connected to a licensed system at the end of each particular year increase as follows:

Year	Number of subscribers
1997	30 000
1998	50 000
1999	80 000
2000	100 000

Sri Lanka Telecom is permitted to continue providing basic fixed telephony using wireless local loop technology limited to operating within the 800 MHz radio-frequency band. As it is not possible to serve a small number of subscribers from a switching centre, the WLL operators are expected to connect a large number of subscribers to avoid the penalty.

To treat one telephone installation in a rural area as ten telephones is presently under consideration by the Telecommunication Regulatory Commission (TRC).

With regard to cellular operators, a new tariff called "Home Zone Tariff" is being introduced to encourage the rural population to use cellular phones where there is no fixed access coverage.

Recently, the Regulatory Commission took a policy decision on a recommendation by the Ministry of Posts, Telecommunications and the Media to invite competitive bidding to provide telephones to rural sub-post offices. This will create an incentive to provide services at best possible prices. It will ensure that most of these post offices will be connected.

The concept of universal service/access is not specifically referred to in the Sri Lanka telecommunication legislation and as such no definition in this regard is available in the Act or in the operator's licence.

Sri Lanka Telecommunications Act No. 25 of 1991 as amended by Act No. 27 of 1996 lays down the general objectives to be achieved by the TRCSL. Some of these are as follows:

- To ensure the provision of a reliable and efficient national and international telecommunication service in Sri Lanka (save as insofar as the provision thereof is impracticable) such as will satisfy all reasonable demands for such services including emergency services, public call box services, directory information services, maritime services and rural services as may be considered for the national well-being.
- To protect and promote interests of consumers, purchasers and other users and the public interest with respect to the charges for and the quality and variety of telecommunication services provided and telecommunication apparatus supplied.
- To promote the rapid and sustained development of telecommunication facilities both domestic and international.
- To ensure that the operators are able to carry out their obligations for providing a reliable efficient service free from undue delay, hindrance or impediment.

In order to achieve these objectives, the Telecommunications Regulatory Commission has been given powers to obtain information, modify technical plans, modify licences and to direct redress to consumers. The Act also gives the power to the Regulator to make rules and regulations and to advise the Minister.

With regard to provision of universal access/service, Sri Lanka focuses mainly on providing access to rural areas. Some 75% of the Sri Lankan population lives in rural areas. Sri Lanka has yet to consider other groups such as disabled persons and pensioners, although many countries have recognized the extension of communications to persons with special needs. Since the teledensity is very low in Sri Lanka in comparison with developed countries, the groups of people belonging to these categories have not yet been considered. It is the rural populace which has been targeted as beneficiaries of universal access/service.

Another important fact to be considered is innovations in telecommunications. Governments and regulators should stimulate innovation. A simple example of promoting innovation to serve universal service obligations is the current one considered by the Sri Lankan regulator in relation to payphones where there is no incoming call facility at present. This proposal is submitted by a private company to have voice-mail access on payphones to meet the requirements of the public.

Re-selling of telecommunication facilities is very popular in Sri Lanka. This interesting piece of legislation was introduced in 1996 to the Telecommunications Act of Sri Lanka to regularize reselling activities.

Communication bureaux in many parts of the country are operating as resellers of telephones, facsimile and Internet facilities at exorbitant prices. As telephone access was not affordable to a large portion of the society, this was like an answer to a prayer. These facilities were mainly used by the relatives of the people who left the shores of Sri Lanka to work in the Middle Eastern countries in search of petrodollars.

The Regulatory Commission has now launched a project with the fixed access operators to regulate the Communication Bureaux to enable the public to get the best possible rates and services.

Universal access to healthcare facilities was considered as very important by the Commission. The Commission and its staff donated equipment to connect the national hospital and ambulances, which did not have any “connectivity” earlier.

Although telecommunication legislation does not expressly provide for universal access, there are many provisions which enable the regulator to achieve statutory objectives.

The Sri Lanka Telecommunications Act also provides that TRCSL (regulator) will have certain powers and duties to achieve the statutory objectives under the Act:

- To ensure that the telecommunication services in the country are operated in a manner which will best serve and contribute to its overall economic and social development and advancement.
- To pay due regard to the public interest and the convenience and wishes of the general public as regards the telecommunication services provided by the operator.

With regard to quality of service, the licensed operators have to comply with the quality standards set by rules prepared in terms of the Telecommunications Act. Higher quality of service will be helpful to business. A fine example of quality of service monitoring by the regulator was the publicity given to the Commission directive to refund the rental of a subscriber who was deprived of service for more than 50 days which paved way for many consumer complaints. In the area of QoS, the Commission and the operators could work together in order reach the prescribed standards.

Generally, universal access/service provision means the extension of telecommunications to remote and rural areas so that everyone has the option of having a telephone or is in easy reach of one. Availability of telecommunications improves security.

As a signatory to the Tampere Convention, Sri Lanka is concerned with mitigating destructive consequences whether the disasters are natural or man-made.

Although the civil disturbances in the northern and eastern regions of the country have to a great deal affected the provision of telecommunication services over the last decade, the Government of Sri Lanka makes every endeavour to provide services to these regions in spite of the disturbances as the people living in those areas have the right to communicate and to use basic telecommunication services.

7 Zambia

7.1 Introduction

Zambia is a landlocked country with an area of 752 620 square kilometres and a population of about 10 million people. The country is situated in the southern part of Africa and shares borders with eight other African countries, these being Angola, Botswana, Democratic Republic of Congo, Malawi, Mozambique, Namibia, Tanzania and Zimbabwe.

Zambia is a member of the Organization of African Unity (OAU) and also of the regional groupings of Southern African Development Community (SADC) and the Common Market of Eastern and Southern Africa (COMESA), which has its Secretariat in the Zambian Capital, Lusaka. Zambia is the current Chairman of the Pan-African Telecommunications Union (PATU). Zambia is also a signatory to the Lomé Convention of ACP countries.

The Republic of Zambia gained political independence from Great Britain on the 24th of October 1964. Up until 1991, when multi-party elections were held in the first truly democratic setting, the Zambian economy was based on socialistic principles. Major business concerns such as the copper mines, national airline, national railways, road transport, national broadcasting and posts and telecommunications were, either wholly or in majority shareholding, owned and controlled by the Government.

Although Zambia is a tropical country, the high altitude rising to some 2 164 metres above sea level ensures a generally cool environment. There are three seasons – cool dry season (April to August); hot dry season (August to November) and the warm wet season (November to April). The warmest month is October (30-35 degrees Celsius) and the coolest is June (5-10 degrees Celsius). The country's vegetation is mainly savannah with rainfall averaging 750 mm/year in the South and 1 270 mm/year in the North.

7.2 The telecommunication sector

Zambia's telecommunication sector is fully liberalized. Prior to liberalization, postal and telecommunication services were provided by the Posts and Telecommunications Corporation (PTC) under the direct supervision of the Ministry responsible for communications. During this period, the services offered by both institutions were concentrated mainly in urban areas.

7.2.1 Liberalization

In July, 1994, Parliament passed the Telecommunications Act. The Act ushered in a new era of private participation in the provision of telecommunication networks and services.

The Telecommunications Act provided for the separation of policy-making, regulatory and operational functions in the sector.

Government, through the Ministry of Communications and Transport, is responsible for policy-making.

The Telecommunications Act established the Communications Authority of Zambia (CAZ), which is responsible for the management and interpretation of policy through regulation and licensing. CAZ may grant licences for the provision and operation of telecommunication services to eligible individuals or organizations subject to prescribed conditions.

The passing of the Act also saw the break-up of PTC into two autonomous operators. The Postal Division of PTC became the Zambia Postal Services Corporation (ZAMPOST) and the Telecommunications Division became the Zambia Telecommunications Company (ZAMTEL).

7.2.2 Communications Authority of Zambia (CAZ)

The Communications Authority of Zambia (CAZ) was established by Government in order to regulate the provision of telecommunication services in the country. The main functions of CAZ are:

- to develop rules and procedures that would promote and safeguard social requirements and competition in the telecommunication sector;
- to protect the interest of users and consumers of telecommunication services;
- to create a fair playing-field for operators and investors;
- to administer effective and efficient utilization of the radio frequency spectrum.

7.2.3 Zambia Telecommunications Company Limited (ZAMTEL)

Zamtel, a national telecommunications operator, was formed as result of the split of the PTC. The company is still the pre-dominant provider of basic services such as Public Switched Telephone Service, International Access, Facsimile and Telex. ZAMTEL is currently wholly Government owned.

Zamtel has a Universal Service Obligation (USO) to provide service to rural and sparsely populated areas even where service provision is not profitable. Following liberalization, the company has been earmarked for privatization and, at this year's budget presentation, a 20% minority shareholding in Zamtel was announced.

The telecommunication sector has opened up to competition and, so far, it has seen the entry of new operators in mobile cellular service and other value-added services such as public call offices and Internet provision.

Services such as callback and refiling, although yet to be prohibited by law, are discouraged.

7.3 Service provision

7.3.1 Sector growth

Although the sector in Zambia is still in its infancy, current liberalization has stimulated some growth with new participants entering the market. By the end of 1998, there were four companies offering telecommunication services. Telecel and Zamcell joined Zamtel as providers of cellular phone services, Zynex operates Public Call Offices (PCOs) and Zamnet and Coppernet are Internet Service Providers (ISPs). (The current operators in the sector and the types of services provided are shown in the table below).

Table – Service availability and provision

Service type	Company				
	Telecel	Zamcell	Zamnet	Zamtel	Zynex
Facsimile				*	
LDC				*	
Internet			*	*	
Mobile-N	*	*		*	
Mobile-R		*			
Paging					*
PCO-CD				*	*
PCO-CN				*	
PSDN					
PSTN				*	
SES				*	
Telex				*	
Legend: LDC Leased data circuit Mobile-N National mobile telephone service Mobile-R Mobile telephone service with international roaming PCO-CN Coin operated public call office PCO-CD Card operated public call office PSDN Public switched data network PSTN Public switched telephone network SES International satellite earth station					

There are also a number of Customer Premise Equipment (CPE) providers, dealing in such equipment as Private Branch Exchanges (PBXs), telephone hand sets, facsimile machines, telephone answering machines, mobile telephone hand sets, etc.

The country still has a long way to go before the demand for telecommunication services can be considered as satisfied. In most areas, telephone penetration, measured as the number of direct exchange lines per 100 population, is less than 1. There is also a considerable disparity in telephone service distribution between urban and rural areas with the density averaging at 1.2 and 0.4 respectively.

7.3.2 The mobile telephone market

Mobile telephone services deserve special mention as the main growth area in the sector since the advent of liberalization. There are currently three cellular phone operators:

- Zamcell is the latest cellular phone operator to enter the market. The company has introduced, for the first time in Zambia, the pan-European digital Global Mobile System for communication (GSM) and is making arrangements to secure regional and international roaming agreements.
- Telecel's target is to have 12 000 subscribers in Lusaka and another 12 000 on the Copperbelt. When the network was commissioned in 1997, it used Code Division Multiple Access (CDMA) digital technology supplied by Motorola. Telecel has since replaced the CDMA network with a GSM one. Telecel's network has been expanded to cover most major towns on the Copperbelt.
- Zamtel's cellular network covers Lusaka and the Copperbelt and is based on analogue Advanced Mobile Phone Service (AMPS) technology supplied by NEC of Japan. There are 4 488 subscribers currently connected to the Zamtel cellular network. Plans are at an advanced stage for the Zamtel cellular network to migrate from analogue to digital using GSM technology. The planned expansion will be in two phases. The first phase, expected to be completed before the end of year 2001, will cover the major towns along the industrialized line of rail on the south-north run of the country. The projected subscriber base for the first phase is about 25 000. The second phase will see service extended to the rest of the country.

7.4 The Zamtel network

7.4.1 Overview

Telecommunication services available in the country include basic voice telephony, facsimile, public call offices, telex, telegraphy, leased data circuits, Internet and radio and TV broadcasting. The most important of these services still remains basic telephony.

Zamtel owns most of the telecommunication infrastructure in the country and provides all wired public telephone services and the main national and international long-distance circuits. The company operates a countrywide telecommunication services network that covers all administrative districts. The districts are served by a variety of telephone exchanges ranging from the old crossbar switches to modern digital ones. The network is connected mainly via analogue terrestrial microwave routes and satellite links using VSAT technology. The microwave links also provide a nationwide distribution network for radio and television.

7.4.2 Telephone network

The national network consists of 94 telephone exchanges (some of which combine local and transit functions), eight satellite exchanges, two transit exchanges and one international gateway. Of these, 31 are digital systems, 44 are analogue electronic, 18 are analogue crossbar and one is a manual system. All the satellite exchanges are digital, linked to parent exchanges by cable PCM (six systems) and radio PCM (two systems). The digital international gateway has just been upgraded to handle CCS 7 signalling. The development trend is towards full digitization.

The total installed capacity is 126 760 of which some 70% are served by digital exchanges.

Telephone service is available in all the administrative districts and the national telephone density is 0.88 direct telephone lines per 100 population. The growth rate for telephone service is about 3.5%.

Sixty-five telephone exchanges, which consist of 41 rural and 24 urban crossbar systems, are very old and are no longer in production. These require replacement in order to achieve a higher grade of telephone service.

7.4.3 Public call offices (PCOs)

Zamtel operates some 1 030 PCOs installed nationwide. Eight hundred and eighty of these are token operated with denominations of one unit for local calls and five units for long-distance national calls. A hundred and fifty of the PCOs are card operated.

7.4.4 Telex network

The telex network covers the whole country. Larger cities are connected through Time Division Multiplex (TDM) equipment, while Voice Frequency Telegraphy (VFT) circuits serve remote areas.

There are two exchanges in operation with a combined capacity of 4 504 lines. A Stored Program Controlled (SPC) exchange was commissioned in 1976 in Lusaka and a digital telex exchange was commissioned in 1989 in Kitwe. The Lusaka exchange is old and plans to phase it out are in place. Due to declined usage of the telex service, there are no plans to expand existing capacity.

7.4.5 National transmission network

The national switching centres are connected by 28 microwave and 28 VHF/UHF radio links. Six of the microwave links, including the high usage route linking the capital, Lusaka, to the Copperbelt region, are digital.

7.4.6 International transmission links

International telecommunication service is provided via terrestrial radio over the Panafel network and also via satellite using two standard A earth stations working with the Intelsat global satellite network. The first earth station, Mwembeshi 1-A (commissioned in 1985), operates in the Indian Ocean Region (IOR) and the second one, Mwembeshi 2-A (commissioned in 1988), operates in the Atlantic Ocean Region (AOR). Installation works are going on to replace the aged IOR earth station with a new digital system.

Low Cost Time Division Multiple Access (LC-TDMA) digital satellite technology has been implemented for the Mwembeshi 2-A earth station.

7.4.7 Domestic satellite (DOMSAT) network

In 1997, the central hub station for the DOMSAT network using Demand Assigned Multiple Access (DAMA) technology was commissioned in Lusaka. The aim of the network is to provide telephone and data services to customers in remote areas not yet connected to the Public Switched Telephone Network (PSTN).

To date, six remote stations are connected to the network and there are plans to connect more. The DOMSAT network is also capable of providing VSAT services for private companies and other organizations interested in setting up their own local or wide area data transmission networks.

7.4.8 Wireless Local Loop (WLL)

In order to promote development in rural areas with scattered communities and also to address its universal access/service obligations, Zamtel is installing WLL telephone systems all over the country. WLL systems are also being installed in the subscriber distribution networks of other areas as a solution to the high incidence of theft and vandalism of copper cable.

7.4.9 Cellular telephone network

The company first launched its cellular telephone service in the capital, Lusaka, in 1995. The technology used is analogue Advanced Mobile Phone System (AMPS) with an initial capacity of 5 000 lines. The service has since expanded to cover the Copperbelt region and the number of connected subscribers stands at 4 488. Plans are in place for further expansion to cover the rest of the country using GSM technology. The two-phase National Cellular Network project is expected to be completed by the end of year 2002.

Two other cellular phone operators, Telecel and Zamcell have set up networks in the country. (Details in paragraph 7.3.2.)

7.4.10 Internet service

Zamtel became the second Internet Service Provider (ISP) in Zambia in 1997, with capacity to handle about 1 000 subscribers from a Point of Presence (POP) in Lusaka. A higher capacity link has just been installed and a second POP is planned for the Copperbelt to cater for anticipated growth of Internet traffic. A third ISP, Coppernet, became operational in 1999.

7.5 Future investments

7.5.1 Demand for telecommunication services

The current combined capacities of Zamtel and other service providers fall far short of satisfying customer demand. There is a need to expand and modernize existing networks and services and to introduce new ones in order to meet both real and latent demand.

Developing telecommunications is very capital intensive, especially since, as is the case of Zambia as a developing country, virtually all plant and machinery have to be imported. The changed circumstances in a liberalized economy also mean that Zamtel, for example, can no longer depend upon the traditional support from external aid donors for soft loans and grants. The company has to devise new ways and means of securing funding for development of network infrastructure.

7.5.2 Fibre optic cables

There are plans to install high capacity fibre optic cables to serve high traffic domestic routes. The cables will cater for existing and anticipated demand.

7.5.3 Spur links

There are plans to replace all existing open wire carrier systems with digital radio links in ring formation to serve as alternative routing to the star formation microwave links already in operation.

7.5.4 Wireless Local Loop (WLL) systems

The WLL system has proved cost effective in the provision of service to rural and farming communities. It has also proved its worth in the fight against vandalism and theft of copper cables. For these reasons, investment in WLL technology countrywide will continue. It is planned to install only digital WLL systems.

7.5.5 Satellite communications

The Mwembeshi 2-A earth station has been upgraded by provision of Intermediate Data Rate (IDR) and Digital Circuit Multiplex Equipment (DCME) to enable the antenna to meet the Intelsat operating requirements. Plans are under way to replace the fifteen-year-old Mwembeshi 1-A earth station with a fully digital system.

A number of private VSAT stations have been licensed to provide private wide area data networks.

7.5.6 Regional interconnectivity

Plans are at an advanced stage to set up a regional network to link countries in the COMESA region. The proposed network, COMTEL, will link Member countries using fibre optic cable and ATM technology. It has been proposed that the network is run as a joint venture between COMESA telecommunications operators and an offshore registered private company.

There are similar plans to connect Member countries of the SADC region.

7.5.7 Data communication network

There is need for an interconnected data communication network for the SADC region. Plans are under way for the implementation of the project.

7.5.8 Outside plant (OSP)

Most of the OSP network consists of PVC insulated cable which is mostly procured locally from Metal Fabricators of Zambia (ZAMEFA). OSP comprises one of the major operational expenditures for Zamtel. Large quantities of cable are used to replace old and vandalized cables.

7.5.9 Global Mobile Personal Communication by Satellite (GMPCS)

Zambia is committed to adopt strategies that ensure that the country is not lagging too far behind in adopting new technologies such as GMPCS. The policy, regulatory, legal, technological, operational, social and economic factors relating to GMPCS have been studied. Government is considering the signing of the ITU GMPCS Memorandum of Understanding (MoU).

7.6 Constraints

Development of telecommunications is a continuous process. The network is required to keep pace with increased demand and changing technologies. In the past, developments in the telecommunication infrastructure in Zambia were achieved mainly through loans from international financial institutions such as the African Development Bank (ADB), World Bank, commercial banks and assistance through bilateral aid from cooperating countries. In the present circumstances, there is no flow of such assistance.

New operators will require substantial capital injection in order to take off while newly privatized entities will need to secure alternative sources of project financing after being detached from government.

The high taxation on imported equipment and generally the lack of capital required for project implementation are the major constraints that are facing the sector.

Furthermore, the interest rates charged by local banks are prohibitive. Moreover, local banks lack the capacity to lend the huge sums of money associated with telecommunication development projects.

7.7 Universal access/service

7.7.1 Background

Before the creation of Zamtel and the Communications Authority of Zambia (CAZ) in 1994 as respective operating and regulatory entities of the national telecommunications network, Government, through the Posts and Telecommunications Corporation (PTC), was directly involved in the evolution of the network. Medium-and long-term development were part of National Development Plans. PTC was also responsible for radio-frequency allocation and monitoring and also for Type Approval of subscriber terminal equipment. The rural network benefitted from the favourable economic environment of the late sixties and early seventies and achieved considerable growth.

After liberalization, one of the major immediate problems faced by CAZ was that of universal access/service. While there exists strong Government goodwill for provision of at least basic telephone service to all parts of the nation, new methods of achieving this in the new competitive environment had to be worked out. CAZ is, at this stage, unequal to the task both in expertise and resources.

Universal access/service is currently a subject of national debate among the stakeholders and, while everyone understands and supports the goals of, at least, offering access to basic telephone service to every citizen, where there is less unanimity are the ways and means of achieving this.

Although not formally defined, the concept of universal access/service obligation in Zambia, as is the case in many developing countries, is understood more as the provision of access to, at least, basic telephone service of acceptable quality, at affordable cost and within reasonable distance. The concept of provision of universal service is considered as out of the capability of developing economies.

7.7.2 Universal Access Fund (UAF)

The setting up of a UAF for the provision of telecommunication services to rural and remote areas was alluded to in the Telecommunications Act of 1994. What was not made clear was how this fund was going to be set up and administered.

7.7.2.1 Fund capitalization

One proposal for raising capital for UAF was through direct tax on revenues of operators of the so-called profitable networks. The idea emanates from the apparent success of the road tax in the transport sector where a percentage of revenues from fuel sales is used for maintenance of roads. It has been argued here that this may prove to be impractical since, unlike fuel, most telecommunication services are not sold on cash-on-delivery basis. If UAF is to be collected on billing, as is currently the case with value-added tax (VAT), the operator would have to be paying huge amounts on billing, bad debts inclusive. There are also fears that, as is suspected with the road tax, the money collected under UAF could be diverted to fund other government priority areas.

A variation of the above is that of capitalizing UAF from a national blanket tax. It is argued that, apart from taxing only those in formal employment, some of whom do not have telephone service, the tax net would not capture those in informal employment, some of whom do enjoy telephone service.

7.7.2.2 Network operation and maintenance

Another important question is that of ownership and operation of the rural networks under UAF. It does not make economic sense for the Government to set up another operating entity while at the same time putting up Zamtel for privatization. CAZ, who are supposed to oversee administration of the fund, cannot go into operation and the idea of funding a private operator through UAF seems too complicated to be considered seriously.

7.7.3 Free rural licence

One of the first proposals to be considered was the offer of a free operating licence for rural networks as opposed to the very expensive licences for networks such as urban, national, international and cellular. The main concern with this solution is the geographic and economic definition of "rural area". In addition, since telecommunications are recognized as a development engine, there is also the question of how long before an area under the free licence scheme could graduate from rural to urban status.

7.7.4 Concessionary obligations

Another option under consideration is the making of the provision of service to rural areas a condition of granting licences for the other networks. Apart from the economic considerations, the technical viability of, for example, a cellular network operator setting up a separate network to cater for the rural areas would need

to be considered. Such a network would need to be dedicated to the particular area and should not be just an extension of the operator's cellular capability. As is the case with the "free rural licence" (Paragraph 7.7.3), the question of definition of "rural area" is important here.

7.7.5 Play or Pay

This scheme, under which an operator chooses to either provide universal access or pay in lieu, has also been discussed. Complications here include determination of levels of payments from non-players. The impending privatization of Zamtel also has a bearing on the adoption of such a scheme – the new owners might choose not to play.

7.7.6 New technologies

The settlement of the question of universal access/service in Zambia has been considerably slowed down by the delayed realization of the promise of new ways and means of offering service to remote areas by utilizing Low Earth Orbit satellites and other satellite-based technologies. The pan-African project RASCOM (Regional African Satellite Communication Organization), for example, includes plans to extend service to within five kilometres of every African village.

7.8 Conclusions

Zambia, like many other developing countries of Africa, is striving to develop its telecommunication sector. In this age where the world is becoming a global village, there is need for countries to recognize the importance of putting in place strategies that will allow for development to take in all spheres of life, including the field of telecommunications.

The Zambian Government is currently engaged in a broad-based reform programme aimed at restructuring the economy and developing the private sector.

The Government has, therefore, recognized the need for private participation in the telecommunication sector so as to raise capital for the development of telecommunications and enhance efficiency in the provision of services.

The question of universal access/service is a very important one. All stakeholders should put in every effort to see to it that it is resolved. The benefit of access to at least basic telephone service should be extended to every citizen. It might have been easy for Zamtel as a monopoly to extend service to remote subscribers. The current situation, however, should be looked at differently. It is worth noting that revenue from the national network, which might have been used to subsidize provision of service to remote areas, has declined considerably because of shared traffic with the new cellular operators.

Given in the Appendices are some national indicators to give an idea of how the country fares as a typical example of a Least Developed Country with a telephone density of less than one direct exchange line (DEL) per hundred of population. (The current value of the national currency is about K 3 000 to USD 1.)

ZAMBIA

National indicators

APPENDIX A

Population by province (in thousands)

	1980	1990	1994	1995	1996	1997	1998
Total national population	5 662	7 759	8 799	9 095	9 397	9 712	10 036
Rural	3 403	4 810	5 440	5 618	5 814	6 018	6 226
Urban	2 259	2 949	3 359	3 477	3 583	3 694	3 810
Central	512	771	888	915	939	964	989
Rural	361	549	635	654	673	693	713
Urban	151	222	253	261	266	271	276
Copperbelt	1 251	1 458	1 587	1 623	1 645	1 668	1 691
Rural	221	219	235	239	241	245	248
Urban	1 030	1 239	1 352	1 384	1 404	1 423	1 443
Eastern	651	1 004	1 149	1 193	1 245	1 299	1 355
Rural	588	915	1 046	1 086	1 133	1 182	1 233
Urban	63	89	103	107	112	117	122
Luapula	421	565	616	631	646	662	678
Rural	366	479	522	534	547	560	574
Urban	55	86	94	97	99	102	104
Lusaka	691	991	1 242	1 315	1 388	1 462	1 543
Rural	140	167	210	223	239	257	276
Urban	551	824	1 032	1 092	1 148	1 206	1 267
Northern	512	926	1 050	1 088	1 124	1 161	1 200
Rural	361	799	902	934	964	995	1 027
Urban	151	127	148	154	160	166	173
N/Western	303	438	495	510	528	547	562
Rural	262	378	426	439	454	470	482
Urban	41	60	69	71	74	77	80
Southern	672	965	1 081	1 114	1 161	1 210	1 261
Rural	505	754	845	874	910	947	986
Urban	167	221	236	240	251	263	275
Western	486	638	691	704	721	738	756
Rural	404	558	619	634	652	670	689
Urban	82	80	72	70	69	68	67

NOTES:

1980 and 1990 are census figures while 1994 to 1998 are projections.

Average population growth rate: 3.1 per cent.

Average number of births per woman: 6.5 (1992) and 6.1 (1996).

Infant mortality rate (per 1 000): 107 (1992) and 109 (1996).

Under five mortality rate (per 1 000): 191 (1992) and 197 (1996).

APPENDIX B

Employment (informal sector)

	1993	1996
Total rural male	844 128	926 494
Total rural female	950 285	1 109 022
Total rural both	1 794 413	2 035 516
Total urban male	107 850	217 019
Total urban female	121 041	229 852
Total urban both	228 891	446 871
Total male	951 978	1 143 513
Total female	1 071 326	1 338 874
Total both	2 023 034	2 482 387

APPENDIX C

Employment (formal sector in thousands)

	1993	1994	1995	1996	1997	1998
Total	520.0	496.0	485.0	479.4	475.2	465.0
Transport and Communications	29.0	29.0	36.5	38.3	45.9	46.1
Agriculture, Forestry and Fisheries	82.8	78.3	69.1	68.3	58.9	57.5
Mining and Quarrying	58.2	51.2	52.2	47.7	44.5	39.4
Manufacturing	67.6	57.1	55.7	47.4	47.1	43.3
Electricity and Water	5.7	5.1	5.0	4.4	5.0	4.8
Construction	22.1	17.5	10.5	13.1	17.1	18.3
Catering, Hotels and Restaurants	49.3	49.9	41.4	46.8	48.9	49.9
Finance, Insurance, Real Estate and Business Services	37.0	34.1	41.9	37.6	37.8	37.6
Community and Social	168.3	173.8	172.6	125.8	169.8	169.9
Redundancies	4.8	10.0	7.5	4.1	4.4	9.6

APPENDIX D

Industrial production

	1993	1994	1995	1996	1997	1998
Electricity generated (million kW)	7 868.6	8 140.9	8 129.4	7 130.1	7 856.2	7 280.0
Electricity consumption (million kW)	6 960.4	6 739.0	7 147.0	3 559.0	6 354.4	6 474.4
Copper production (× 1 000 tonnes)	403.5	360.2	307.1	314.6	308.9	242.2
Zinc (× 1 000 tonnes)	5.6	0.1	–	–	–	–
Lead (× 1 000 tonnes)	1.6	–	–	–	–	–
Coal (× 1 000 tonnes)	329.0	135.0	152.0	128.1	165.0	–
Cobalt (× 1 000 tonnes)	4.2	2.6	2.8	4.8	4.2	–

APPENDIX E

Index of industrial production (1980 = 100)

	1993	1994	1995	1996	1997	1998
Total index	88.3	77.3	73.1	71.3	77.1	74.2
Mining	73.5	60.9	54.5	62.3	62.9	60.4
Manufacturing	111.8	101.1	98.5	84.4	96.9	94.3
Electricity	85.3	88.3	89.7	77.5	89.8	82.8

APPENDIX F

Gross domestic product (GDP components in billions kwacha)

	1994	1995	1996	1997	1998
Government Final Consumption	293.6	464.0	721.6	898.0	951.5
Private Final Expenditure Consumption	1 780.8	2 168.7	3 015.9	3 747.2	4 428.6
Gross Fixed Capital Formation	253.6	373.4	442.8	675.1	908.1
Increase in Stocks	69.0	104.8	63.1	77.3	95.0
Exports	806.5	1 082.3	1 237.4	1 519.4	1 621.7
Total GDP	2 240.7	2 998.3	3 944.8	5 169.0	5 921.1
Per Capita GDP (× 1 000 kwacha)	255.8	329.1	417.4	528.5	586.3

APPENDIX G

Inflation rates and purchasing power of the local currency

	1995	1996	1997	1998
Metropolitan low-income group	46.1	34.6	17.2	31.1
Metropolitan high-income group	40.8	36.3	19.1	30.0
Non-metropolitan income group	49.5	34.8	19.0	30.7
Composite	46.0	35.2	18.6	30.6
Purchasing power of one kwacha	74.1	51.8	41.6	33.5

APPENDIX H

Consumer price index (1994 = 100)

	1995	1996	1997	1998
Metropolitan low-income group	135.8	192.8	237.8	280.9
Metropolitan high-income group	135.3	188.3	235.1	276.8
Non-metropolitan income group	134.2	196.3	245.0	288.9
Wholesale price index (1996 = 100)	396 390.2	466 145.5	568 451.5	268 749.6
Price index of building materials (1974 = 100)	348 133.9	28 233.2	435 974.9	541 531.3

APPENDIX I

Money and banking (million kwacha)

	1994	1995	1996	1997	1998
Money supply	138 829.9	216 050.6	272 916.7	379 797.7	360 104.9
Bank loans and advances	144 168.2	213 121.3	397 322.1	328 421.9	575 171.9
Savings and time deposits	173 682.8	221 522.7	288 615.7	305 542.7	258 898.8

APPENDIX J

Public finance (billion kwacha)

	1994	1995	1996	1997	1998
Total revenue and grants	503.4	763.1	618.4	1 246.7	1 496.7
Total revenue	502.8	757.5	593.0	959.3	1 163.7
Current revenue	502.6	757.5	592.8	958.9	1 162.9
Tax revenue	21.9	671.7	544.7	933.7	1 089.6
Non-tax revenue	80.7	85.8	48.1	25.2	88.3
Capital revenue	0.2	–	0.2	0.4	0.8
Grants	0.6	5.6	25.4	287.4	333.0
Total expenditure and net lending	530.8	743.4	866.8	1 713.8	1 710.5
Total expenditure	492.2	727.7	842.6	1 575.6	1 572.2
Current expenditure	260.5	440.4	720.0	906.1	1 160.9
Capital expenditure	231.7	287.3	122.0	669.5	411.3
Overall surplus (or deficit)	(27.4)	19.7	(248.4)	(467.1)	(213.8)
Financing	27.4	(19.7)	248.4	467.1	213.8
Abroad	73.9	488.3	187.4	772.4	280.2
Domestic	(46.5)	(508.0)	61.0	(305.3)	(66.4)

APPENDIX K

Balance of payments (million kwacha)

	1995	1996	1997
Exports	1 133 874.57	1 274 224.25	1 500 362.12
Imports	(725 310.66)	(1 076 202.56)	(1 326 979.07)
Trade balance	408 563.91	198 021.68	173 383.05
Non-factor services (net)	(567 281.49)	(698 142.51)	801 649.03
Investment income (net)	(258 633.17)	(273 469.51)	286 720.13
Current account balance	(146 861.57)	(405 330.04)	(619 871.61)
Overall balance	(249 932.38)	(193 044.85)	(242 387.38)

APPENDIX L

Education (1994 figures)

Primary school	1 507 660
Secondary school	199 154
Teacher training colleges	4 598
Vocational training institutes	4 888
Universities	3 734

APPENDIX M

Health

	1993	1994	1995
Number of hospitals	82	82	84
Number of beds in hospitals	17 077	16 999	16 960
Number of health centres	1 106	1 110	1 082
Number of beds in health centres	9 322	9 539	9 502

Zambia Telecommunications Company Limited
Telephone exchange statistics

Exchange	Equipped capacity	Working lines	Class	Technology	Make	Connected capacity %	Demand	Waiting list	Manufacturer	Year installed
AIRPORT	512	265	URBAN	ELECTRONIC	MCR	51.76	272	7	ITT	1980
CHAMBESHI	500	192	URBAN	DIGITAL	NEAX 61E	38.40	315	123	NEC	1991
CHELSTON	3 000	1 786	URBAN	ELECTRONIC	NXIE	59.53	2 368	582	ITT	1984
CHILANGA	1 200	510	URBAN	DIGITAL	E 10	42.50	689	179	ALCATEL	1996
CHILILABOM	2 000	939	URBAN	DIGITAL	NEAX 61E	46.95	1 125	186	NEC	1993
CHILNGOLA	3 000	2 604	URBAN	CROSSBAR	ARF	86.80	2 882	276	ERICSSON	1981
CHINIKA	2 500	1 261	URBAN	DIGITAL	NEAX 61E	50.44	1 507	246	NEC	1990
CHINSALI	192	116	RURAL	ELECTRONIC	MCR	60.42	117	1	ITT	1983
CHIRUNDU	96	83	RURAL	ELECTRONIC	MCR	86.46	210	127	STK	1987
CHISAMBA	256	88	RURAL	ELECTRONIC	MCR	34.38	93	5	STK	1987
CHONGWE	96	82	RURAL	ELECTRONIC	MCR	85.42	83	1	STK	1988
EMMASDALE	3 872	1 862	URBAN	DIGITAL	NEAX 62E	48.09	2 449	587	NEC	1989
ISOKA	256	133	RURAL	ELECTRONIC	MCR	51.95	134	1	ITT	1983
ITIMPI	500	125	URBAN	DIGITAL	NEAX 61E	25.00	139	14	NEC	1991
KABOMPO	128	93	RURAL	ELECTRONIC	MCR	72.66	142	49	ITT	1985
KAFUE	2 000	1 053	URBAN	ELECTRONIC	NX 1E	52.65	1 166	113	ITT	1982
KALULUSHI	3 000	748	URBAN	DIGITAL	NEAX 61E	24.93	777	29	NEC	1993
KAPUTA	240	34	RURAL	DIGITAL	4300 R	14.17	38	4	ALCATEL	1996
KASAMA	2 000	1 077	URBAN	DIGITAL	E 10	53.85	1 130	53	ALCATEL	1995
KASEMPA	128	114	RURAL	ELECTRONIC	MCR	89.06	174	60	ITT	1985
KAWAMBWA	256	80	RURAL	ELECTRONIC	MCR	31.25	114	34	ITT	1983
LUANGWA	96	74	RURAL	ELECTRONIC	MCR	77.08	74	0	ITT	1984
LUSAKA	16 500	11 027	URBAN	DIGITAL	NEAX 61E	66.83	11 908	881	NEC	1989
MAKENI	1 000	901	URBAN	DIGITAL	NEAX 61E	90.10	1 212	311	NEC	1990
MUMBWA	400	253	URBAN	CROSSBAR	ARF	63.25	333	80	ERICSSON	1980
NAMALUNDU	96	96	RURAL	ELECTRONIC	MCR	100.00	99	3	STK	1987
NAMPUNDWE	96	96	RURAL	ELECTRONIC	MCR	100.00	101	5	STK	1988
RIDGEWAY	5 500	4 582	URBAN	DIGITAL	NEAX 61E	83.31	4 827	245	NEC	1994
ROMA	3 500	2 803	URBAN	DIGITAL	NEAX 61E	80.09	3 433	630	NEC	1989
SIAVONGA	576	285	URBAN	ELECTRONIC	MCR	49.48	308	23	STK	1987
WOODLANDS	7 000	4 331	URBAN	DIGITAL	E 10B	61.87	4 737	406	ALCATEL	1987

Zambia Telecommunications Company Limited
Telephone exchange statistics (cont.)

Exchange	Equipped capacity	Working lines	Class	Technology	Make	Connected capacity %	Demand	Waiting list	Manufacturer	Year installed
CHADIZA	200	63	RURAL	CROSSBAR	ARK	31.50	135	72	ERICSSON	1981
CHAMA	128	74	RURAL	ELECTRONIC	MCR	57.81	95	21	STK	1987
CHIBOMBO	128	67	RURAL	ELECTRONIC	MCR	52.34	67	0	STK	1988
CHIPATA A	800	679	URBAN	CROSSBAR	ARF	84.88	976	297	ERICSSON	1981
IND. NORTH	1 300	951	URBAN	DIGITAL	E 10	73.15	1 066	115	ALCATEL	1987
IND. SOUTH	1 000	271	URBAN	DIGITAL	E 10	27.10	288	17	ALCATEL	1987
KABUSHI	2 200	1 009	URBAN	DIGITAL	E 10	45.86	1 297	288	ALCATEL	1987
KANSENSHI	2 000	1 214	URBAN	DIGITAL	E 10	60.70	1 445	231	ALCATEL	1987
KITWE	12 000	6 622	URBAN	DIGITAL	NEAX 61E	55.18	7 117	495	NEC	1991
LUANSHYA	3 000	2 000	URBAN	CROSSBAR	ARF	66.67	2 734	734	ERICSSON	1978
LUWINGU	256	74	RURAL	ELECTRONIC	MCR	28.91	74	0	ITT	1984
MANSA	1 000	656	RURAL	DIGITAL	NEAX 61E	65.60	872	216	NEC	1990
MASAITI	96	82	RURAL	ELECTRONIC	MCR	85.42	180	98	STK	1989
MBALA	640	374	RURAL	ELECTRONIC	MCR	58.44	383	9	ITT	1983
MINDOLO	3 000	1 606	URBAN	DIGITAL	NEAX 61E	53.53	1 705	99	NEC	1993
MPIKA	768	314	RURAL	ELECTRONIC	MCR	40.89	390	76	ITT	1983
MPONGWE	96	29	RURAL	DIGITAL	4 300R	30.21	83	54	ALCATEL	1998
MPOROKOSO	256	99	RURAL	ELECTRONIC	MCR	38.67	99	0	ITT	1983
MPULUNGU	192	170	RURAL	ELECTRONIC	MCR	88.54	171	1	ITT	1983
MUFULIRA	3 000	1 658	URBAN	CROSSBAR	ARF	55.27	1 940	282	ERICSSON	1980
MUFUMBWE	96	61	RURAL	ELECTRONIC	MCR	63.54	88	27	ITT	1985
MUNGWI	128	95	RURAL	ELECTRONIC	MCR	74.22	95	0	ITT	1983
MWENSE	128	51	RURAL	ELECTRONIC	MCR	39.84	69	18	ITT	1983
MWINILUNGA	128	75	RURAL	ELECTRONIC	MCR	58.59	122	47	ITT	1985
NAKONDE	192	128	RURAL	ELECTRONIC	MCR	66.67	128	0	ITT	1983
NCHELENGE	128	77	RURAL	ELECTRONIC	MCR	60.16	107	30	ITT	1983
NDOLA MAIN	9 000	4 947	URBAN	DIGITAL	E 10	54.97	5 327	380	ALCATEL	1987
NORTHRISE	1 300	657	URBAN	DIGITAL	E 10	50.54	1 012	355	ALCATEL	1987
PAMODZI	1 300	349	URBAN	DIGITAL	E 10	26.85	446	97	ALCATEL	1987
SAMFYA	256	143	RURAL	DIGITAL	MCR	55.86	235	92	ITT	1983
SOLWEZI	1 000	682	RURAL	DIGITAL	NEAX 61E	68.20	801	119	NEC	1990
ZAMBEZI	128	120	RURAL	ELECTRONIC	MCR	93.75	198	78	ITT	1985

Zambia Telecommunications Company Limited
Telephone exchange statistics (end)

Exchange	Equipped capacity	Working lines	Class	Technology	Make	Connected capacity %	Demand	Waiting list	Manufacturer	Year installed
CHIPATA H	1 000	592	URBAN	CROSSBAR	C 23 HC	59.20	596	4	HITACHI	1989
CHOMA A	800	530	URBAN	CROSSBAR	ARF	66.25	566	36	ERICSSON	1979
CHOMA H	1 000	309	URBAN	CROSSBAR	C 23 H	30.90	315	6	HITACHI	1991
GWEMBE	200	49	RURAL	CROSSBAR	ARK	24.50	49	0	ERICSSON	1980
ITEZHI-TEZHI	96	72	RURAL	ELECTRONIC	MCR	75.00	74	2	STK	1987
KABWE	4 000	2 612	RURAL	ELECTRONIC	NX 1E	65.30	3 128	516	ITT	1982
KALABO	128	93	RURAL	ELECTRONIC	MCR	72.66	131	38	ITT	1983
KALOMO	400	165	RURAL	CROSSBAR	ARK	41.25	171	6	ERICSSON	1979
KAOMA	256	149	RURAL	ELECTRONIC	MCR	58.20	255	106	ITT	1983
KAPIRI	384	250	URBAN	ELECTRONIC	MCR	65.10	255	5	ITT	1982
KATETE	300	178	RURAL	CROSSBAR	ARK	59.33	353	175	ERICSSON	1981
L/STONE	5 000	1 812	URBAN	DIGITAL	E 18B	36.24	2 037	225	ALCATEL	1987
LUKULU	96	71	RURAL	ELECTRONIC	MCR	73.96	77	6	ITT	1983
LUNDAZI	384	223	RURAL	ELECTRONIC	MCR	58.07	263	40	STK	1987
LUSAKA MOB	4 500	3 752	URBAN	DIGITAL	NEAX 61E	83.38	3 752	0	NEC	1995
MAAMBA	256	138	RURAL	ELECTRONIC	MCR	53.91	139	1	STK	1987
MAZABUKA	1 000	776	URBAN	CROSSBAR	ARF	77.60	978	202	ERICSSON	1980
MFUWE	96	83	RURAL	ELECTRONIC	MCR	86.46	129	46	STK	1987
MKUSHI	384	319	RURAL	ELECTRONIC	MCR	83.07	348	29	ITT	1982
MONGU	1 000	738	URBAN	DIGITAL	NEAX 61E	73.80	858	120	NEC	1990
MONZE	1 000	414	URBAN	CROSSBAR	ARF	41.40	416	2	ERICSSON	1980
NAMWALA	128	107	RURAL	ELECTRONIC	MCR	83.59	108	1	STK	1987
NYIMBA	200	63	RURAL	CROSSBAR	ARK	31.50	99	36	ERICSSON	1981
PEMBA	300	51	RURAL	CROSSBAR	ARK	17.00	51	0	ERICSSON	1980
PETAUKE	400	197	RURAL	CROSSBAR	ARK	49.25	406	209	ERICSSON	1981
SENANGA	256	132	RURAL	ELECTRONIC	MCR	51.56	167	35	ITT	1983
SERENJE	384	213	RURAL	ELECTRONIC	MCR	55.47	215	2	ITT	1982
SESHEKE	240	79	RURAL	DIGITAL	4300 R	32.92	79	0	ALCATEL	1996
SINAZONGWE	160	26	RURAL	DIGITAL	4300 R	16.25	114	88	ALCATEL	1998
SINDA	200	45	RURAL	CROSSBAR	ARK	22.50	50	5	ERICSSON	1981
ZIMBA	100	49	RURAL	MANUAL	PMBX	49.00	53	4	PLESSEY	1972
TOTALS	130 988	77 377				59.07	88 933	11 556		

Zambia Telecommunications Company Limited
Some important milestones in the development of telecommunication services in Zambia

Year	Event
1913	First manual telephone exchange installed in Livingstone.
1931	First wireless stations installed at Mpika and Kabwe.
1933	First trunk services between Northern Rhodesia (Zambia), Southern Rhodesia (Zimbabwe) and South Africa.
1957	Subscriber Trunk Dialling introduced in main centres.
1958	Telex services introduced.
1964	Manual exchanges replaced by Strowger Step-by-Step automatic systems.
1967	Lusaka-Kabwe 960 Channel microwave link commissioned.
1974	First satellite Earth Station, Mwembeshi 1-A, commissioned.
1974	Lusaka-Livingstone 960 Channel microwave link commissioned.
1978	Lusaka-Nakonde Panaftel microwave link commissioned.
1980	Lusaka-Chipata microwave link commissioned.
1980	Lusaka-Mongu microwave link commissioned.
1985	First digital exchange, AXE 10, introduced serving as International Gateway.
1985	International Direct Dialling (IDD) service introduced.
1987	First digital local exchange, Alcatel E10 B, installed in Ndola.
1988	Second satellite Earth Station, Mwembeshi 2-A, commissioned.
1995	AMPS Mobile Telephone Service introduced in the capital, Lusaka.
1997	First Domestic Satellite (DOMSAT) network service introduced at Sesheke.
1997	The ZAMTEL.zm Internet Service introduced.

Zambia Telecommunications Company Limited
Annual route summaries of international telephone traffic
(Outgoing traffic in minutes)

ROUTE	1994/5	1995/6	1996/7	1997/8	1998/9	TOTAL
ANGOLA	0	119	0	0	0	119
AUSTRALIA	49 365	81 945	97 066	54 957	0	283 333
BELGIUM	100 511	102 056	105 606	123 830	107 982	539 985
BOTSWANA	287 725	271 177	260 922	260 972	314 867	1 395 663
CANADA	163 357	247 164	264 826	147 669	166 182	989 198
DENMARK	33 342	61 866	5 797	0	0	101 005
ETHIOPIA	0	2 344	0	0	0	2 344
FINLAND	21 259	23 059	2 356	0	0	46 674
FRANCE	375 065	353 758	242 384	108 205	208 881	1 288 293
GERMANY	426 677	446 048	501 640	277 287	272 249	1 923 901
GREAT BRITAIN	2 878 313	2 843 902	2 758 748	2 199 435	2 244 143	12 924 541
HONG KONG	0	0	0	0	9 636	9 636
INDIA	382 517	471 372	463 427	425 875	514 689	2 257 880
ITALY	174 648	172 976	158 026	446 830	321 597	1 274 077
JAPAN	93 422	118 236	115 414	127 545	122 403	577 020
KENYA	303 708	257 221	276 654	326 776	313 990	1 478 349
LESOTHO	2 906	137	0	15	0	3 058
MALAWI	126 249	55 490	200 324	239 943	202 309	824 315
NETHERLANDS	174 498	179 472	346 162	300 482	257 409	1 258 023
NORWAY	24 169	43 527	4 291	0	0	71 987
SINGAPORE	0	0	0	0	4 490	4 490
SOUTH AFRICA	3 120 173	3 547 665	3 964 818	4 682 620	4 554 053	19 869 309
SWAZILAND	7 152	2 124	1 141	26	0	10 443
SWEDEN	52 260	189 852	17 734	0	0	259 846
TANZANIA	203 130	225 347	254 370	269 192	277 669	1 229 708
UGANDA	41 069	27 550	28 037	12 395	3 022	112 073
USA (AT&T)	474 267	574 488	558 780	512 520	615 875	2 735 930
USA (MCI)	200 055	295 540	655 527	946 727	1 118 577	3 216 426
ZIMBABWE	1 212 120	1 422 358	1 350 354	1 455 081	1 469 803	6 909 716
TOTAL	10 927 937	12 016 793	12 634 404	12 918 382	13 099 826	61 597 342

Zambia Telecommunications Company Limited
Annual route summaries of international telephone traffic
(Incoming traffic in minutes)

ROUTE	1994/5	1995/6	1996/7	1997/8	1998/9	TOTAL
ANGOLA	0	1 944	0	0	0	1 944
AUSTRALIA	103 707	129 465	159 077	58 313	647	451 209
BELGIUM	139 961	123 964	115 711	123 526	128 296	631 458
BOTSWANA	110 989	465 031	409 422	634 008	814 739	2 434 189
CANADA	469 263	572 278	609 857	875 415	774 400	3 356 213
DENMARK	84 775	91 768	68 782	89 324	65 430	400 079
FINLAND	79 393	54 198	23 444	13 964	31 225	202 224
FRANCE	202 512	252 154	151 245	173 455	602 300	1 381 666
GERMANY	282 793	277 659	261 959	317 267	235 453	1 375 131
GREAT BRITAIN	2 600 003	3 048 378	2 530 186	2 447 993	2 679 062	13 305 622
GREECE	15 492	43 229	38 917	24 048	48 763	170 449
HONG KONG	0	0	0	23 800	23 727	47 527
INDIA	261 569	374 745	268 153	446 768	397 740	1 748 975
ITALY	485 748	447 593	853 268	1 433 336	1 344 763	4 565 068
JAPAN	171 708	192 568	195 035	217 435	183 903	960 649
KENYA	138 465	233 611	251 764	271 047	233 413	1 128 300
LESOTHO	0	9 380	9 629	0	0	19 459
MALAWI	60 189	2 542	88	313 415	212 901	589 135
NETHERLANDS	161 956	247 426	301 712	364 592	305 019	1 380 705
NORWAY	113 968	16 874	128 027	126 627	129 728	515 224
SINGAPORE	0	0	0	16 116	0	16 116
SOUTH AFRICA	4 485 727	4 630 411	4 977 382	6 221 964	6 661 674	26 977 158
SWAZILAND	7 114	21 446	506	29	26	29 121
SWEDEN	109 490	96 153	84 079	103 661	128 553	521 936
TANZANIA	170 579	174 842	226 756	339 531	272 991	1 184 699
UGANDA	16 314	18 826	9 973	17 993	24 834	87 940
USA (AT&T)	2 449 201	1 697 741	1 873 847	1 984 864	1 977 239	9 982 892
USA (MCI)	1 477 330	1 557 038	2 477 254	2 399 831	1 255 383	9 166 836
ZIMBABWE	1 252 722	1 159 746	1 100 599	2 134 883	1 766 998	7 414 948
TOTAL	15 452 924	15 899 175	17 130 160	21 178 477	20 301 945	89 962 681

Zambia Telecommunications Company Limited
International telephone and telex charges
(USD per minute, effective 1 May 1999)

Country	Old rate	New rate	Off peak rate
AFGHANISTAN	2.90	2.60	2.00
ALASKA	2.40	2.20	1.60
ALBANIA	2.80	2.50	1.90
ALGERIA	2.40	2.20	1.60
AMERICAN SAMOA	2.40	2.20	1.60
ANDORRA	2.20	2.00	1.50
ANGOLA	1.80	1.60	1.20
ANTIGUA AND BARBUDA	2.40	2.20	1.60
ARGENTINA	2.40	2.20	1.60
ASCENSION ISLAND	2.40	2.20	1.60
AUSTRALIA	2.20	2.00	1.50
AUSTRIA	2.40	2.20	1.60
AZERBAIJAN	2.80	2.50	1.90
AZORES	2.40	2.20	1.60
BAHAMAS	2.40	2.20	1.60
BAHRAIN	2.40	2.20	1.60
BANGLADESH	2.40	2.20	1.60
BARBADOS	2.40	2.20	1.60
BELIZE	2.90	2.60	2.00
BENIN	2.40	2.20	1.60
BERMUDA	2.40	2.20	1.60
BOLIVIA	2.40	2.20	1.60
BHUTAN	2.40	2.20	1.60
BOPHUTHATSWANA	1.80	1.60	1.20
BOSNIA AND HERZEGOVINA	2.40	2.20	1.60
BOTSWANA	1.80	1.60	1.20
BRAZIL	2.90	2.60	2.00
BRUNEI DARUSSALEM	2.40	2.20	1.60
BULGARIA	2.80	2.50	1.90
BURKINA FASO	2.80	2.50	1.90
CAMBODIA	2.90	2.60	2.00
CAMEROON	2.40	2.20	1.60
CANADA	2.20	2.00	1.50
CANARY ISLANDS	2.40	2.20	1.60
CAPE VERDE	2.90	2.60	2.00
CAYMAN ISLANDS	2.40	2.20	1.60
CENTRAL AFRICAN REPUBLIC	2.40	2.20	1.60
CHAD	2.90	2.60	2.00

Zambia Telecommunications Company Limited
International telephone and telex charges

(USD per minute, effective 1 May 1999) (*cont.*)

Country	Old rate	New rate	Off peak rate
CHILE	2.90	2.60	2.00
CHINA	2.80	2.50	1.90
COMOROS	1.80	1.60	1.20
CONGO	2.80	2.50	1.90
CONGO D.R. (SHABA REGION)	1.80	1.60	1.20
CONGO D.R. (THE REST)	2.40	2.20	1.60
COOK ISLANDS	2.40	2.20	1.60
COSTA RICA	2.40	2.20	1.60
CÔTE D'IVOIRE	2.80	2.50	1.90
CROATIA	2.40	2.20	1.60
CUBA	2.90	2.60	2.00
CYPRUS	2.40	2.20	1.60
CZECH REPUBLIC	2.40	2.20	1.60
DENMARK	2.20	2.00	1.50
DIEGO GARCIA	2.80	2.50	1.90
DJIBOUTI	1.80	1.60	1.20
DOMINICA	2.40	2.20	1.60
DOMINICAN REPUBLIC	2.40	2.20	1.60
EAST TIMOR	2.40	2.20	1.60
ECUADOR	2.40	2.20	1.60
EGYPT	1.80	1.60	1.20
EL SALVADOR	2.90	2.60	2.00
EQUATORIAL GUINEA	2.40	2.20	1.60
ERITREA	2.90	2.60	2.00
ESTONIA	2.80	2.50	1.90
ETHIOPIA	1.80	1.60	1.20
FAROE ISLANDS	2.20	2.00	1.50
FIJI	2.40	2.20	1.60
FINLAND	2.20	2.00	1.50
FRANCE	2.20	2.00	1.50
FRENCH GUINEA	2.40	2.20	1.60
FRENCH POLYNESIA	2.40	2.20	1.60
GABON	2.90	2.60	2.00
GAMBIA	2.40	2.20	1.60
GEORGIA	2.80	2.50	1.90
GERMANY	2.20	2.00	1.50
GHANA	2.40	2.20	1.60

Zambia Telecommunications Company Limited
International telephone and telex charges
(USD per minute, effective 1 May 1999) (cont.)

Country	Old rate	New rate	Off peak rate
GIBRALTAR	2.40	2.20	1.60
GREECE	2.80	2.50	1.90
GREENLAND	2.40	2.20	1.60
GRENADA	2.40	2.20	1.60
GUADELOUPE	2.90	2.60	2.00
GUAM	2.40	2.20	1.60
GUATEMALA	2.40	2.20	1.60
GUINEA	2.80	2.50	1.90
GUINEA BISSAU	2.80	2.50	1.90
GUYANA	2.40	2.20	1.60
HAITI	2.90	2.60	2.00
HAWAII	2.40	2.20	1.60
HONDURAS	2.40	2.20	1.60
HONG KONG	2.40	2.20	1.60
HUNGARY	2.40	2.20	1.60
ICELAND	2.80	2.50	1.90
INDIA	2.20	2.00	1.50
INDONESIA	2.40	2.20	1.60
IRAN (ISLAMIC REPUBLIC OF)	2.40	2.20	1.60
IRAQ	2.40	2.20	1.60
IRELAND	2.40	2.20	1.60
ISRAEL	2.40	2.20	1.60
ITALY	2.20	2.00	1.50
JAMAICA	2.40	2.20	1.60
JAPAN	2.20	2.00	1.50
JORDAN	2.80	2.50	1.90
KENYA	1.80	1.60	1.20
KIRIBATI	2.40	2.20	1.60
KOREA	2.40	2.20	1.60
KUWAIT	2.40	2.20	1.60
LAO P.D.R.	2.90	2.60	2.00
LATVIA	2.80	2.50	1.90
LEBANON	2.90	2.60	2.00
LESOTHO	1.80	1.60	1.20
LIBERIA	2.40	2.20	1.60
LIBYA	2.40	2.20	1.60
LIECHTENSTEIN	2.80	2.50	1.90
LITHUANIA	2.80	2.50	1.90
LUXEMBOURG	2.40	2.20	1.60

Zambia Telecommunications Company Limited
International telephone and telex charges

(USD per minute, effective 1 May 1999) (*cont.*)

Country	Old rate	New rate	Off peak rate
MACAO	2.80	2.50	1.90
MACEDONIA	2.40	2.20	1.60
MADAGASCAR	1.80	1.60	1.20
MADEIRA	2.40	2.20	1.60
MALAWI	1.80	1.60	1.20
MALAYSIA	2.40	2.20	1.60
MALDIVES	2.40	2.20	1.60
MALI	2.80	2.50	1.90
MALTA	2.80	2.50	1.90
MARSHALL ISLANDS	2.90	2.60	2.00
MARTINIQUE	2.90	2.60	2.00
MAURITANIA	2.90	2.60	2.00
MAURITIUS	1.80	1.60	1.20
MELILA	2.40	2.20	1.60
MEXICO	2.90	2.60	2.00
MICRONESIA	2.40	2.20	1.60
MARINA	2.40	2.20	1.60
MOLDOVA	2.80	2.50	1.90
MONACO	2.40	2.20	1.60
MONGOLIA	2.90	2.60	2.00
MONTSERRAT	2.40	2.20	1.60
MOROCCO	2.40	2.20	1.60
MOZAMBIQUE	1.80	1.60	1.20
MYANMAR	2.90	2.60	2.00
NAMIBIA	1.80	1.60	1.20
NAURU	2.40	2.20	1.60
NEPAL	2.40	2.20	1.60
NETHERLANDS	2.20	2.00	1.50
NETHERLANDS ANTILLES	2.40	2.20	1.60
NEW CALEDONIA	2.40	2.20	1.60
NEW ZEALAND	2.40	2.20	1.60
NICARAGUA	2.40	2.20	1.60
NIEU	2.40	2.20	1.60
NIGER	2.40	2.20	1.60
NIGERIA	2.40	2.20	1.60
NORWAY	2.20	2.00	1.50
OMAN	2.80	2.50	1.90

Zambia Telecommunications Company Limited
International telephone and telex charges
(USD per minute, effective 1 May 1999) (cont.)

Country	Old rate	New rate	Off peak rate
PAKISTAN	2.80	2.50	1.90
PALAU	2.90	2.60	2.00
PANAMA	2.40	2.20	1.60
PAPUA NEW GUINEA	2.40	2.20	1.60
PARAGUAY	2.80	2.50	1.90
PHILIPPINES	2.40	2.20	1.60
POLAND	2.40	2.20	1.60
PORTUGAL	2.40	2.20	1.60
PUERTO RICO	2.90	2.60	2.00
QATAR	2.40	2.20	1.60
REUNION	2.80	2.50	1.90
ROMANIA	2.80	2.50	1.90
RUSSIAN FEDERATION	2.80	2.50	1.90
RWANDA	1.80	1.60	1.20
SAN MARINO	2.40	2.20	1.60
SAUDI ARABIA	2.90	2.60	2.00
SENEGAL	2.80	2.50	1.90
SEYCHELLES	1.80	1.60	1.20
SIERRA LEONE	2.40	2.20	1.60
SINGAPORE	2.40	2.20	1.60
SLOVAKIA	2.40	2.20	1.60
SLOVENIA	2.40	2.20	1.60
SOLOMON ISLANDS	2.40	2.20	1.60
SOMALIA	1.80	1.60	1.20
SOUTH AFRICA	1.80	1.60	1.20
SPAIN	2.80	2.50	1.90
SRI LANKA	2.40	2.20	1.60
ST. HELENA	2.40	2.20	1.60
ST. KITTS AND NEVIS	2.40	2.20	1.60
ST. LUCIA	2.40	2.20	1.60
ST. PIERRE AND MIQUELON	2.90	2.60	2.00
SAO TOME AND PRINCIPE	2.90	2.60	2.00
ST. VINCENT AND THE GRENADINES	2.40	2.20	1.60
SUDAN	2.40	2.20	1.60
SURINAME	2.90	2.60	2.00
SWAZILAND	1.80	1.60	1.20
SWEDEN	2.20	2.00	1.50
SWITZERLAND	2.80	2.50	1.90
SYRIA	2.40	2.20	1.60

Zambia Telecommunications Company Limited
International telephone and telex charges

(USD per minute, effective 1 May 1999) (*end*)

Country	Old rate	New rate	Off peak rate
TAIWAN	2.90	2.60	2.00
TANZANIA	1.80	1.60	1.20
THAILAND	2.90	2.60	2.00
TOGO	2.80	2.50	1.90
TOKELAU	2.90	2.60	2.00
TONGA	2.40	2.20	1.60
TORTOLA	2.40	2.20	1.60
TRINIDAD AND TOBAGO	2.40	2.20	1.60
TUNISIA	2.40	2.20	1.60
TURKEY	2.80	2.50	1.90
TURKS AND CAICOS ISLANDS	2.40	2.20	1.60
TUVALU	2.40	2.20	1.60
UGANDA	1.80	1.60	1.20
UKRAINE	2.80	2.50	1.90
UNITED ARAB EMIRATES	2.90	2.60	2.00
UNITED KINGDOM	2.20	2.00	1.50
UNITED STATES OF AMERICA	2.20	2.00	1.50
URUGUAY	2.90	2.60	2.00
VANUATU	2.40	2.20	1.60
VENDA	1.80	1.60	1.20
VENEZUELA	2.40	2.20	1.60
VIET NAM	2.90	2.60	2.00
VIRGIN ISLANDS	2.40	2.20	1.60
YUGOSLAVIA	2.40	2.20	1.60
WALLIS AND FUTUNA	2.90	2.60	2.00
WESTERN SAMOA	2.90	2.60	2.00
YEMEN ARAB REP.	2.90	2.60	2.00
ZIMBABWE	1.80	1.60	1.20