

Consultation Document: Ref. 2004/1

Implementation of the Universal Service for ICTs in Mauritius

February 2004

1. Preface

It is a well recognised tenet of communication theory that the more individuals, groups and institutions are connected with the public networks, the more valuable those networks will be for each individual and the public at large. The need to foster a widespread and ubiquitous telecommunication and ICT sector has been a long-standing and explicit goal of many governments' policy frameworks across the world. Increasingly, regulators and policy-makers are promoting public access to ICTs. The world has in recent years undergone a paradigm shift-- away from nationalised provision of telecommunication services in favour of a competitive market-based model with a view to furthering the aforesaid public access. The private sector has responded to consumer demand where policies and regulation encourage investment and service deployment.

The growth and operation of a vibrant competitive market coupled with effective regulation can go a long way towards ensuring universal access, and enabling universal service. In few countries however the goals of universal access and universal service have been left entirely to the market. Although universal service has been an implicit telecommunication policy objective in most countries, it has over the last decade been given a more explicit status. In some cases government and regulator have had to go as far as redesigning their entire market structure on the ability to deliver universal service or at least universal access.

The liberalisation of telecommunications market through the introduction of competition is changing the way many countries now approach the universal access and universal service policies. This is due in part to the fact that services are being provisioned at a more rapid pace, prices are falling and new and innovative services are being introduced. Increasingly, policy-makers and industry experts are altering their views of un-served and under-served areas, regarding them less as intractable problems and more as potential markets given the right regulatory conditions. Moreover, it is important to distinguish the market efficiency gap from the true access gap before designing a proper universal service strategy.

In Mauritius, the ICT Authority has the statutory duty, under sections 18 (1)(w), and 21 (1) of the Information and Communication Technologies Act 2001, to establish and manage a Universal Service Fund. During the exclusivity period the incumbent operator, Mauritius Telecom (MT), had been entrusted with the obligation of universal service provision as part of its licence condition. In a liberalised environment, with a view to ensuring a level-playing field, the universal service obligation of the pre-liberalisation period may no more be impressed on MT. In this regard the

Authority has undertaken to restructure the universal service support for the ICTs sectors in Mauritius. The proposal made in this document is well in line with the competitive telecommunication market that is mandated for the country.

This consultation paper first traces the history of the concept of universal service. It then presents the evolution of universal service, and universal access over time by explaining the concept defined as the 'basic access continuum'. Ways and means by which universal service may be implemented are presented. The notion of Universal Service Fund is then introduced, and a model, based on ITU guidelines, for the creation and management of a Universal Service Fund for Mauritius is presented. The model is derived in the light of a SWOT analysis that is made about the ICT sector of the country.

This document is being made available for public consultation. Views, contributions, and comments on the issues which have been set out for consultation, should be sent to the **Chairman, ICT Authority, Jade House, Remy Ollier street, Port Louis**, or by email to icta@intnet.mu, at latest by 22 March 2004 at 16:00 hrs. An open house session relative to this issue will subsequently be held at a date that will be communicated later.

Glossary of Terms

Accessibility means that people with disabilities can use an ICT service; one's level of physical ability does not affect access to communication service.

Affordability means that everyone can afford service, and no one is disadvantaged by income level. Cost variations due to location, terrain and climate – which often dovetail with urban/rural factors – do not impact in one's access to ICT services.

Availability means that the level of service is the same wherever a person lives or works, with no disadvantage stemming from geographic location. In particular, rural and urban distinctions do not affect a person's ability to access communication services.

Market efficiency gap means the difference between what markets are actually achieving under current conditions and what they could achieve if regulatory barriers were removed and regulation were used to provide incentives.

Project means any specific Universal Service Fund-supported activity for which one or more organisations receives financing pursuant to the rules and requirement of the fund.

True access gap means the intervention that is still required to reach some areas or population groups that will not be served even with the most optimal efficient and liberalised market conditions.

Universal Access means that everyone in a community can gain access to a publicly available telephone, although not necessarily in their homes.

Universal Service means that every household in the country has telephone service – traditionally, a fixed line phone for every household.

1. Introduction

Universal service may be viewed as a policy designed to provide basic telecommunication services to as many people as possible at prices that they can pay. Universal service aims at ensuring that telecommunication services which are used by the majority, and which are essential to social and economic inclusion are available to everybody on reasonable request, in an appropriate way and at an affordable price. It is primarily considered to be a regulatory safety-net which is intended to ensure that people of low incomes, those living in remote rural areas, disabled people and other vulnerable groups obtain the advantages of telephony. Universal service obligation involves imposing requirements on commercial companies to serve customers who might not otherwise have been served at prices that they may not have chosen commercially.

Universal service may in some cases involve special funding arrangements with the costs of meeting the obligation being paid by the telecom companies involved. The economic rationale for this subsidy is termed the '**network externality**'. The externality occurs because all customers benefit when others join the network, thereby creating an enlarged market for the operators. The benefit cannot be reflected directly in individual transactions or met on strict commercial terms. Hence there is a role for Government in ensuring that the network is as extensive as is feasible at appropriate prices.

Moreover, universal service is an obligation which a fully efficient profit seeking operator may only be able to fulfil at a loss on profit or returns. The foundation policy for universal service may be quite different from country to country depending upon the scope of the Universal Service Obligation (USO) and the way it is financed. In the UK for example the USO is a fundamental concept of regulation of telecoms. In Mauritius USO falls within the purview of the ICT Act according to which the ICT Authority is mandated to establish and manage a Universal Service Fund (USF). The bottom-line nevertheless is that Universal Service (US) is not an industrial policy, i.e. it is neither intended to provide for economic development, nor to encourage the introduction of new technologies.

2. Evolution of Universal Service

2.1 Historical background

The concept of universal service started in 1907 with the slogan "one system, one policy, universal service" by the AT&T company in the United States, in the middle of the early competitive period. Telephone competition at that time posed a "universal service" problem because the competing

telephone exchanges, which were established after expiration of Alexander Graham Bell's patents in 1894, refused to interconnect with each other. The result was that subscribers in the same city could not call each other if they were customers of competing networks. They might also be unable to call users in other cities if the city was controlled by a network hostile to the one in their city. Interconnection of competing networks was not perceived as a viable option at that time. The telephone companies, and most legislators and regulators, agreed that complete interconnection required a single franchised telephone system. From 1907 to 1920 there was a vigorous debate in the United States about the merits of interconnection, competition, and monopoly in telephone service. The issue was resolved in favour of monopoly with the passage of the Willis-Graham Act in 1921. This law exempted telephone companies from the antitrust laws in order to make it possible for them to "unify the service" by merging competing telephone exchanges. In so doing, it provided the legal foundation for the first generation universal service policy.

Universal service at that time meant that all telephone subscribers should be connected to each other. Its main concern was not the level of household telephone penetration, but the fragmentation created by competing systems. "Universal service" was the brand name for the concept of total connectivity; city officials, state regulators and users more commonly referred to "unified service". But the idea was the same – to eliminate the fragmentation created by competition. Competing local exchanges were merged into territorial monopolies and linked into a nationwide system. Regulation was used as a substitute for the price and service incentives of competition. At this stage, utility regulation was not linked to a policy of promoting household telephone penetration or rural-area subsidies.

By the 1970s, the idea that telephone users should be divided up among competing networks was literally unthinkable. The term "universal service" faded from memory but was revived in the mid-1970s by the new competition. The new, **second-generation universal service** policy was part of a broader attempt to salvage the fortunes of the regulated monopoly system in the face of these challenges. The new definition brought with it a sweeping revision of the history of the telephone system, a revisionism which fabricated the legislative origins of universal service policy in making telephone service affordable and available to everybody. The second-generation concept thus defined universal service as a "telephone in every home." Universal service policy became synonymous to regulatory manipulation of rates to make telephone service more "affordable" to residential and rural consumers.

In 1984 the Independent Commission for Worldwide Telecommunications Development (WTD) released the Maitland report, officially entitled as “The Missing Link”, whereby the growing inequalities in telecommunication resources between developed and developing countries were highlighted. This disparity between and even within countries was later coined as the ‘digital-divide’. The report additionally had set a goal; to ensure that by the early part of the 21st century nearly all humankind should be within easy reach of telephone services. The focus in developed countries in the pursuance of that goal has been the expansion of already widely available networks to disadvantaged segments of the population. In developing countries though the focus was placed on universal access, i.e. the installation of infrastructure to deliver service to the population for the first time. Hence at that point in time the role of Universal Access was to bridge the ‘digital divide’.

2. 2 The "new" Universal Service

Over time the subject of Universal Service start gaining worldwide interest. Universal Service has now been institutionalised, and conceptually arguments that explain the need for such service, according to Mark Scanlan, are:

- (i) **Appeal to economic efficiency**; i.e. the policy is meant to correct for network externalities which is bound to result in a market failure. Network externalities mainly arise because the value of the network for each existing customer increases with the number of subscribers, and that it is not always economically feasible to connect everybody to the network. As such to improve on the economic efficiency it becomes important to take measures to address means that remove the shortcomings of those externalities.
- (ii) **The provision of a merit good**; i.e. where there is a social justification that there is something special about a good or service that makes it socially desirable that people should consume more of it, or that it is fundamentally important to our way of life and warrants an official policy to encourage its consumption.
- (iii) **A wish to redistribute society's resources equitably**; this does not imply that there is the need to favour the poor in middle income countries in the pursuance of items like a phone, as they are less likely to even buy such a commodity as opposed to some other basic items.
- (iv) **To avoid divisive disputes between interested groups**; such measures usually lead to tariff averaging with a view to achieving affordability.

(v) **To shift costs away from voters**; such measure leads to cross-subsidisation of residential services with revenues from high priced services used by businesses.

(vi) **To provide visible benefits with invisible costs**; this concerns the transparency in the way subsidy taxes are raised.

In debates about universal service, where (i) and (ii) are missing, we always reject (iii) in favour of state income support. It has been shown that people are quite adept at making economic decisions themselves and as such are believed to be having some sort of consumer sovereignty. (i) and (ii) are often referred to as reasons for a USO policy, but (iv), (v) and (vi) are also typically present; they are often tied up with institutional issues. Where network externalities persist the usual policy recommendation is for lower (targeted) prices to be offered to non-subscribers. The recommendation is based on the assumption that a USO can be designed and operated on its merits, or the economy-wide costs of funding net USO costs can be kept within reasonable limits. As regard merit goods, over longer time horizons, poor people may be too concerned with meeting their basic needs to make rational long-term decisions. This justifies the exception in regard to consumer sovereignty when the state supports a limited number of safety-net services. Merit goods arise out of societal preferences and the government policy. Whether something is a merit good or not cannot be determined through economic analysis.

3. The objectives of Universal Service/Access policies

There are several fundamental principles that underpin the delivery of universal access and universal service. The concepts of universal access and universal service, their content or definition and the implementation of policy may vary depending on a given country's specific social, economic, and political needs. In fact to be effective, the universal service/access policies should be sufficiently elastic to adapt to specific markets and the changing needs of the country in which they are to be applied. In this way there is a definite correlation between local economic and sector conditions and universal service/access definitions. A robust definition of universal service and/or access should include: 1) the types of access stating the clear goals of such access, and 2) the types of services, e.g. voice, voice and data, mobile or others.

3.1 Goals for universal access

The goals for universal access are numerous and vary from among countries relative to the ICT policy in place. In broad terms nevertheless we may summarise the basic goals in Table 1.

Universal Dimensions to be reached	Universal Service goals
Universal availability	Full range of identical services available irrespective of location (e.g. universal provision of payphones), to bridge the digital divide.
Universal accessibility	Provision of equipment to ensure functionality for all users. Non-discriminatory access to all facilities
Universal affordability	Removal as far as possible of all financial barriers to telecommunications access and usage. Efforts to redress socio-economic inequality by explicit targeted programs
Universal technological standard	Policies concerning the spread of communications technologies such that certain innovations are made universal on the basis of need, social expectations and social desirability Uniform quality of service for all users. Periodic upgrading of the standard telecommunication service
Universal telecommunications and participation in society	Policies of telecommunications use which enable full participation in society. Protecting freedom of speech and freedom of information through policies of common carriage and content-neutrality. Protecting privacy

Table 1: Summary of principal goals of universal access/service

The extent to which universal access/service goals are achieved is best ascertained by defining qualitative measurable targets such as teledensity and level of penetration, and comparing them with the achievable levels in a liberalised market. At this stage it is important to first isolate the market efficiency gap from the true access gap, by defining a solid sector reform policy framework.

3.2 Defining the service

“Basic” access to telecommunication services has always been the target of universal service/access policy, but the meaning of the term has never been expressly defined. In developing countries basic service often refers simply to single-line voice grade service. The definition is however evolving as technology develops and countries come closer to reaching their goals for voice service availability. There is indeed a continuum for the definition of basic universal access as illustrated in Figure 1.

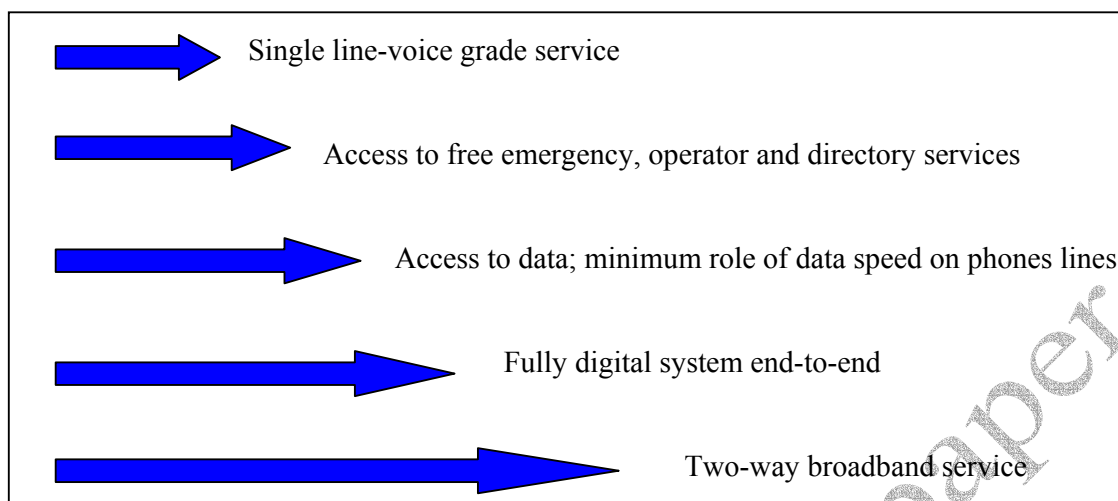


Figure 1: The basic access continuum (Source: “How do we raise the Bar on Universal Service”, [Http://www.benton.org/publibrary/stake/uniserv/bar.html](http://www.benton.org/publibrary/stake/uniserv/bar.html))

Recently with the development of Internet and of broadband access service some countries are exploring ways of incorporating Internet access in the Basic basket of services included in the universal service/access definition. Indeed it is believed that regulators need to recast traditional definitions moving away from a telecommunication-focused paradigm to one that addresses the whole ICT sector. Given the foreseeable increase in global Internet take-up, there is scope for a digital opportunity rather than an obligation under the universal access/service.

4. Presenting the local context – SWOT analysis

- i) **Strength:** Mauritius as at November 2003 has a teledensity of 28% and mobidensity of 34%. Basic dial-up Internet access is available in over 90% of households. ADSL support is available in more than 75% of the island. A Global Information Infrastructure (GII) is available through undersea fibre.
- ii) **Weaknesses:** Prices of many ICT services, e.g. Internet access, are quite high. The market size is small (1.25 million).
- iii) **Opportunities:** The ICT sector is opened to competition. There is room for new services. The e-government project holds promises for major contents
- iv) **Threats:** The GIi may remain under the monopoly of the incumbent operator.

A fact sheet is attached in the appendix to bring out some data regarding the ICT sector as detailed below:

TABLE 1 – User distribution of telephony worldwide by income group

TABLE 2 – Regional distribution of telephony

TABLE 3 – Distribution of Fixed, mobile and Internet services in SADC Countries (2001)

TABLE 4 – Household ICT penetration for Mauritius (2002)

TABLE 5 – Payphone distribution by Population (2002)

TABLE 6 – Infocommunications facts for the Republic of Mauritius

TABLE 7 – Average Monthly Expenditure on the Phone Bill in Mauritius

TABLE 8 – Services Included in Universal Service Definitions 1999 and 2001

TABLE 9 – Household Telephone Penetration of High Income Economies

TABLE 10 – Summary of universality access definitions and obligations

5. Proposed scope of Universal Service/Access for Mauritius

Universal access/service policies are often premised on the belief that the provision of service in rural and remote areas is expensive and therefore unprofitable. They are further based on the idea that low-income users will not be able to get access to the national telecommunication network without at least some level of assistance. Universal service scope has traditionally been defined to encompass the provision of basic telephone service only, and is still the case in many parts of the world where availability of basic services still remains an issue. There are nevertheless some discussions about some possible additions such as: e-commerce, surfing (WWW), IP telephony, IP fax, e-mail, multi-cast, interactive educational and videoconferencing.

Bearing in mind the specific Mauritian context in terms of telephone penetration which stands at 28% for fixed lines and 34 % for cellular, and the GDP which is at US\$3400, it is fair to say that availability of basic services in the main island of Mauritius is not really an issue. As such, the universal service for Mauritius needs to be geared towards other services which government intends to promote at affordable cost in the short and eventually the long run. Furthermore, it is important that any new measures that are adopted do not digress from the fundamental reason for the existence of universal service. We analyse a number of possible services and schemes that may fall under the scope of the universal service support in this section:

a) Telecommunication services in outer islands

The outer island of Agalega is not having proper Telecom facilities. Government proposes to develop Agalega into a tourist destination. In the initial phase setting up of Telecom Infrastructure may not be commercially viable. So this can be supported from the USF.

b) Specialist services for people with disabilities

It is envisaged that specialised services at special tariffs be provided to people with disabilities at no extra charges. Even providing certain services below normal charges viz sms for deaf and dumb, could be supported from USF.

c) Internet access and services

The Government's current vision is to ensure universal access to the Internet, as this will serve as a snowball effect for several other applications such as e-government, etc... The Authority notes that almost everyone wishing to access the Internet now has the ability to obtain access over basic telephone lines, provided they have the necessary equipment and the appropriate training. Over 300,000 potential Mauritian households have Internet access and many more can access it through a work or college computer. The cost of Internet access is nevertheless too high. ICT Authority intends to have as one of its role in helping public institutions work together to reduce the price of Internet access as well as encouraging the telecommunications industry to provide special tariff packages for Internet access for schools, public libraries, further education colleges, Citizens Advice Bureaux and Universities. The setting up of Community Access points with a view to promote affordable Internet access may also be covered under the USF. The establishment of a National Internet Exchange Point (NIXP) is yet another project that will help making local Internet calls cheaper, so that such a project may well be funded out of the USF.

Speed and reliability are important elements of Internet access. ICT Authority considers that further action is required to ensure that users experience data speeds that allow workable access to the Internet. The maximum dialup data speed is currently at 56 kilobits per second (kbps). This should be increased to at least 128 kbps by providing for ADSL connections at affordable rates. ICTA would invite views on the minimum data speed that would be required under USO to ensure workable Internet access for all.

d) Higher bandwidth services

The Government has set the objective for Mauritius to become the Infocom hub of the region. This calls for higher bandwidth within the country with significantly increased connections to schools, libraries, and universities. The market for higher bandwidth services – offering data rates of 384 kbits/s and higher – is still at an infancy stage of development in Mauritius. Broadband services are being delivered to business consumers in Mauritius in 2 main ways: 1). asymmetric digital subscriber line (ADSL); and 2) leased lines (essentially for larger businesses).

Applying the traditional USO model, if higher bandwidth services were used by the majority and essential to full social and economic inclusion, all consumers would be given the right to a telecommunications connection above a stated (higher) data speed on reasonable request at affordable prices. ICTA is emphasising its support for the goal of rolling out higher bandwidth communications networks with equitable and affordable access for all. This statement should not however be misconstrued since it is beyond the scope of universal service to promote new technologies, but the point being brought out is that projects for broadband connectivity will be given due support even from a universal service point of view.

e) Public radio-based maritime distress and safety services

Being an island state this service becomes very important especially with respect to security and safety at sea. Hence, it is believed that part of the USF may be used in the maintenance and support of such radio-based system.

6. Financing Universal service/access goals

The funding for universal service/access support schemes is based around two general model commonly classified as the ‘pay’ and the ‘play’ options. In the first model, regulators have developed several mechanisms to apply universal service/access obligation upon operators or carriers. These include: 1) licence conditions, 2) cross-subsidy, 3) Access Deficit Charges (ADC), and 4) Universal Service Fund (USF).

The licence condition usually involves a trade-off whereby the operator gains an exclusivity guarantee for a defined period in exchange of a commitment to meet national universal access/service targets. Community service obligation, network rollout obligation, teledensity targets, mandates to install public payphones (access points), requirement to reduce waiting list,

quality of service targets, and geographical coverage are among the other obligations to which the said operator need to subscribe.

The cross subsidy mechanism is historically practised by incumbent fixed line operators who fund the universal access/service through internal cross-subsidisation, which involves the use of surplus revenues earned in profitable market segments to cover losses in non-profitable services. This has traditionally been used to fund the installation of access lines and to maintain low prices for local loop service.

The ADC mechanism is designed to compensate operators for their access deficit where a designated operator bears the obligation to provide access services to certain customers below cost. These operators raise the money to fund their access deficit from other operators who use their network element. ADC are often collected on a per minute basis similar to IUC.

The mechanism of a fund to provide universal service/access has gained popularity over the last decade. Such a fund into which monies from various sources maybe contributed is generally viewed as one of the best means to achieve the universality objectives. The notion of imposing some form of tax to sustain universal access/service is acceptable provided that the contribution amounts are determined in a transparent manner, and that they are ploughed back into the ICT sector in a fair manner. These funds are usually collected and administered by the regulator or any other body.

In contrast to the 'pay' model, the 'play' approach has shifted the perception of the universal service/access obligation from a burden to a business opportunity given the economic case and market potential of un-served or under-served areas. There is no physical contribution nor disbursement that are made, rather policy-makers provide opportunities incentives for operators to take part in the 'play' side of the 'pay or play' equation. Typical approach is to provide incentives to operators to provide services in less profitable areas. Other schemes that may be promoted are micro-credit or BOT arrangements.

7. Proposal for financing the Universal Service Support for Mauritius

The size and geography of Mauritius as well as the current status of the ICT sector of the country, and the standard of living of the citizens warrant that the 'pay' approach be used for the financing of the universal service/access support. Indeed the mechanisms set out in that model are

evolutionary in nature, and consistent with the migration from a monopolistic to a competitive market structure. Moreover, Mauritius has already gone through the first two mechanisms, we are currently on the third one, and with the recent opening up of the sector it is natural that we now move towards implementation of the fourth mechanism, which is the USF.

It is worth pointing out at this stage that the USF is not a substitute for private market incentives and investments and should not interfere with competitive market forces. Nor is it inconsistent with other market-based measures to improve universal service/access and may be implemented in parallel with other such measures. In this regard, we present a model USF which is derived from the template model policy proposed by the ITU. The establishment and operation of such a fund, the principles and objectives it should serve, and the range of authority, responsibilities and activities that should be assumed by the different parties in the process are described.

7.1 Authorising and enabling laws and policies

All key development programmes begin at high level of national legislation and ministerial legislation and/or regulations made thereon, all of which establish the framework and limitations in which the policy must be implemented. Such a foundation is necessary to ensure the credibility and authority of the policy, as well as consistency with other national priorities and ongoing programmes.

In Mauritius the entire basis of universal access policy has been established as a principle under section 16(a) of the ICT Act 2001, which stipulates that the object of the Authority amongst others shall be: *“to democratise access to information taking into account the quality, diversity, and plurality in the choice of services available through the use of information and communication technologies”*. Additionally, there is an explicit requirement under sections 18(1)(w) and 21 of the ICT Act 2001, which are authorising legislations for the creation of the USF, and designating the Authority as the fund administrator.

7.2 Sources of contributions

Generally according to the ITU the range of companies and operators that should be required to contribute to a USF are those that come under the regulatory auspices of the telecommunication regulator and who offer services that are considered as falling under the definition of ‘basic and enhanced communication’. These would include at a minimum fixed telephone operators, mobile telephone and paging service providers, data and leased line network and service operators, Internet

service providers, communication equipment suppliers, and value added service providers. In places where a converge policy is already in place ITU recommends that cable TV network operators, broadcasters, electronic publishers, and e-commerce and information technology suppliers should as well contribute in the fund. In the light of the ITU's recommendations operators holding a Category 1 licence, under the Act, fall in this basket.

7.3 Revenues contributing to the USF

According to ITU guidelines, operators should contribute a portion of all revenues derived from services that are directly or indirectly linked to the basic and advanced ICT infrastructure, including the very services this fund will support. Such services include all basic local and long distance telephone services and related features, all data transmission, private network, and value added communication services, mobile services, all revenues from interconnection, settlements, and other services rendered to foreign network operators, all revenues from communications equipment sales and rentals, all retail and wholesale Internet access and related services, cable TV and multimedia services. Revenue categories that are potentially excluded from fund contribution are those derived from activities that are unrelated to telecommunication services.

7.4 Determining the contribution amount

In order to determine the necessary amount to be contributed to the fund a careful analysis of the market conditions and key economic factors that may influence the fund's success should be conducted. In most developing countries though some arbitrary contribution levels ranging between 1% to 5% of gross revenues are applied.

In the context of Mauritius, the licence fees is very low. Considering the turnover of total telecom business of the country, the total licence fees payable by the licensees may work out to 0.5% of gross revenue.

The Authority feels that the PSTN, PLMN and ILD licensees can contribute an amount equivalent to the annual licence fees i.e, Rs 8M per annum for PSTN and PLMN licensees and Rs 2M per annum for ILD licensees. In addition the Authority would contribute some amount to the USF. The Government would also be requested to contribute to the USF. All these would be required to make the USF have some meaningful funds which can be spent on the Universal Service.

7.5 Management and Administration of funds

It is established under the Act that the Authority shall be the body designated to manage the USF. It is thus important to draw the management and organisational structure that fits within the Authority to handle the USF, while at the same time ensuring transparency, accountability and preserving autonomy. The proposed structure may consist of the following main components:

- **The ICT Authority Board** which is the board created under the Act.
- **The USF advisory group** which provides input, suggestions and ideas to the USF management concerning project priorities, operational plans, objectives and key issues. The group shall consist of appointed representatives from the industry, the government, public institutions with an emphasis on those most involved with fund activities, public operators, and consumer representatives.
- **The USF fund administrator** who oversees all fund activities.

7.6 Review and revisions of Fund activities

The operations and objectives of the USF programmes shall be subject to periodic review and revisions, both within the Authority and through public comment and consultation process. The Fund administrator will issue an annual report containing at least the following information:

- Financial reports (collections, expenditures, reserves, etc...)
- Description of projects that were funded.
- Goals and budgets of the USF for the coming years
- Review of previously funded projects.
- Revisions to target objectives and estimates of progress.

7.7 Evaluation procedure for determining funding allocations

In practice it is expected that the amount of fund available will be limited and will have to be allocated among a number of competing worthy investments. As such a proper method of rationing should be devised. According to ITU guidelines quantitative methods may be used to analyse the various choices, by comparing the long-term net present value of alternative projects, incorporating social benefits. Competitive bidding is a methodology that can be used to determine funding allocation. Under this the licensees are asked to bid for implementing each of the Universal Service. The licensee who bids for the lowest charges for implementing a Universal Service is asked to provide the Universal Service with the bid amount given from the USF. This model has proven successful in Chile.

Project proposal shall be evaluated according to the viability and completeness of their implementation plans which in many cases may be a vital factor in determining the success or failure of the project. The evaluation criteria that will be adopted will include basically the following seven elements: 1) Location of proposed service, 2) Quality of service, 3) Quantity of service, 4) Community benefits, 5) Implementation plan, 6) Cost, and 7) Bidder qualifications.

Points 1 to 4 may be easily analysed in terms of the submitted data and information. The implementation plan requires both a short-term process for installing facilities and services and a long-term plan for operating and maintaining the services. This will set a foundation to ensure that the networks and services will be sustainable after the USF subsidy has been exhausted. Implementation plans to be included with project proposals should incorporate the following information:

- **Business plans** – three to five year budget projections, break-even analysis and market demand analysis should be provided.
- **Tariff and other pricing proposals** – these should include interconnection agreements with other carriers.
- **Management plan** – these should detail the organisation of the project, the responsibility of personnel.
- **Implementation schedule** – specific dates and sequence of events, the timing of equipment installation and operation startup dates should be included.
- **Publicity and community inclusion programmes** – these should describe plans for inviting participation in the project from affected communities as well as gender awareness considerations and publicity and outreach plans to promote use and benefits of service.
- **Monitoring and reporting plans** – there should be provisions for informing USF managers about progress in implementation, the public response to the services, lessons learnt, identified obstacles and possible improvements.

The cost of a project is defined in terms of the proposed subsidy amount requested from the USF to support its implementation. Additional costs beyond the subsidy amount should not be considered but should be a factor in the evaluation of community benefits and the above-referred implementation plan. For projects that are otherwise considered to be equivalent according to the other evaluation criteria, the proposal requesting the smallest amount of USF is usually awarded the concession. In case it is difficult to compare projects according to exactly equivalent

characteristics, though the amount of subsidy requested remains the selection criterion, other factors may be included to ensure that the winning proposal is the one that provides the greatest net social and economic value.

8. Concluding remarks

Universal service should be seen as an element of a country's social safety-net, rather than an instrument to accelerate network development. The latter in any case is best accomplished through liberalisation and privatisation or through relevant sector reforms. But competition also creates powerful tendencies to flush out subsidies and drive rates toward costs. In rich countries universal service has been seen as a policy intended to provide basic service to those on the margin. In middle income countries perhaps it should mainly focus on universal access. Expanding the scope of universal service tends to result in taxation shifting from the state budget to an inefficient and non-transparent industry tax paid by subscribers. The concept of affordability should nevertheless not be divorced from the cost of supply.

In a recent paper by Professor Toshihiko Hayashi, Director of the Stanford-Japan Research Centre, among one of six ITU “*Visions of the Information Society*” papers, it is clearly mentioned that: **universal service is evolving from securing telephone connection to accessibility to advanced information technology, which involves physical network connectivity, availability of platform, and raised ability of people to freely use various contents and software.** All of which are beneficial to each country and each network subscriber since the network effect accrues to all the entities connected to the global network. Therefore the Universal Service concept is an essential element of the Global Information Society.

Given the reasonably high GDP of and telephone penetration in Mauritius, it is believed that our priority sector for universal service should not be focused on basic telecommunication provision but on other advanced telecommunication service such as broadband Internet access, which will serve as a snowball effect for benefiting sectors like e-government, e-commerce, e-education, etc.... In that respect a model universal service support has been presented in this paper. It is based on the ‘pay’ model revolving around the USF mechanism. The methodology for the creation and administration of the USF for Mauritius is discussed. It should nevertheless be borne in mind that USF are only one of the tools that may be used to augment market efforts to provide universal access and/or service.

Appendix: Facts sheet

TABLE 1 – User distribution by income group

Income level	Teledensity (Main lines/100)	Residential (Main lines/100)	Teleaccessibility (Public telephones/1000)
High Income Countries	59.69	108.8	4.66
Upper Middle Income Countries	22.70	59.8	4.97
Lower Middle Income Countries	13.59	35.8	2.20
Low Income Countries	2.90	11.4	0.44

Source: ITU World Telecommunications Indicators Database

Table 2 below illustrates the growth in telephone lines for regions in the world. It shows the Compound Annual Growth Rate (CAGR) in main lines between 1995 and 2001, with the teledensities in the years 1995 and 2001.

The compound annual growth rate (CAGR) is computed by the formula:

$$\text{CAGR} = [(P_v/P_0)^{(1/n)}] - 1$$

where P_v = Present value

P_0 = Beginning value

n = Number of periods

The result is multiplied by 100 to obtain a percentage.

TABLE 2 – Regional distribution

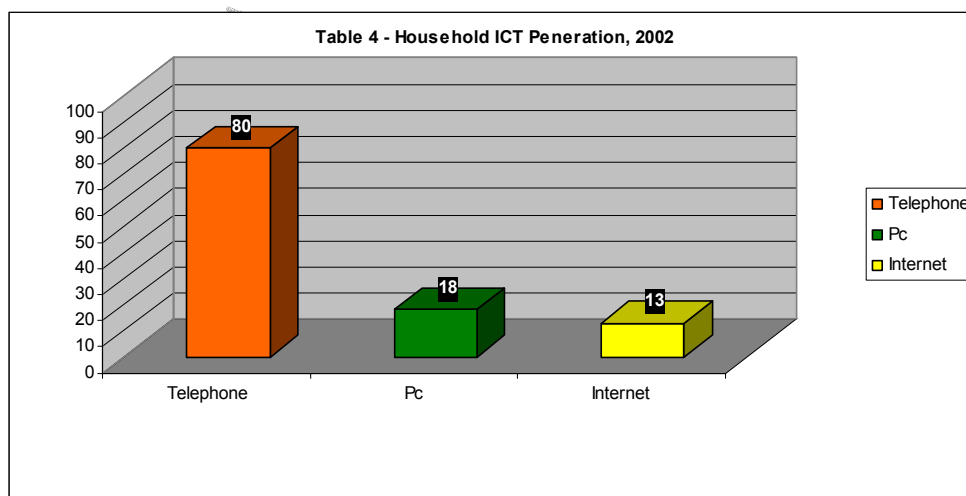
Region	CAGR Main lines / 100 inhabitants 1995-2001	Main lines / 100 inhabitants 1995	Min lines / 100 inhabitants 2001
World	7.2	12.29	17.19
Africa	9.2	1.77	2.62
Americas	5.0	28.71	35.14
Asia	13.5	5.42	10.68
Europe	3.6	33.27	40.54
Oceania	2.0	38.81	40.04

Source: ITU World Telecommunications Indicators Database

Table 3- Distribution in SADC Countries (2001)

Country	Population (M)	GDP per capita (us \$)	Telephone Fixed Lines (k)	Cellular Mobile subscribers (K)	No. of Internet users (K)	No. of fixed lines per 100 inhabitants	No. of Mobiles per 100 inhabitants	No. of Internet users per 10,000 inhabitants
Angola	13.53	901	80.0	86.5	60.0	0.59	0.64	44.35
Botswana	1.67	3047	150.3	278.0	25.0	9.27	16.65	154.13
DR of Congo	52.52	-----	20.0	8.5	6.0	0.04	0.29	1.14
Lesotho	2.16	418	22.2	33.0	5.0	1.03	1.53	23.15
Malawi	11.57	152	54.1	55.7	20.0	0.47	0.48	17.28
Mauritius	1.205	3881	306.8	300.0	158.0	25.56	25.0	1316.67
Mozambique	20.19	209	89.4	169.9	15.0	0.44	0.84	7.43
Nambia	1.79	2040	117.4	100.0	45.0	6.57	5.59	251.68
Seychelles	0.08	7349	21.4	44.1	9.0	26.73	55.15	1125.0
South Africa	43.79	2882	4969	9179.0	3068.0	11.35	21.00	700.58
Swaziland	1.02	1353	32.0	66.0	14.0	3.14	6.47	137.25
Tanzania	35.97	257	148.5	427.0	300.0	0.41	1.19	83.41
Zambia	10.65	463	85.4	98.3	25.0	0.80	0.92	23.48
Zimbabwe	13.65	487	253.7	328.7	100.0	1.86	2.41	73.26

SOURCE: ITU World Telecommunications Indicators Database



SOURCE: Central Statistics Office

Table 5– Payphone distribution by Country's Population (2002)

S.N	Area	Population (k)	P A Y P H O N E S			
			Coinbox	Cardphone	Pointphone	Total
1	Port-Louis	129.7	72	97	260	429
2	Pamplemousses	126.4	45	75	84	204
3	Rivière du Rempart	101.8	50	95	90	235
4	Flacq	130.9	68	62	110	240
5	Grand Port	109.5	59	59	95	213
6	Savanne	67.8	39	32	60	131
7	Plaine Wilhems	366.7	158	203	532	893
8.	Moka	77.2	38	38	70	146
9	Black River	64.0	47	65	77	189
10	Rodrigues	36.2	41	54	21	116
GRAND TOTAL		1210.2	617	780	1399	2796

SOURCE: Mauritius Telecom (MT), Central Statistics Office

Table 6- Info-communications facts in Republic of Mauritius

ITEM	Indicators	year			
		1999	2000	2001	2002
1.	Estimated population (millions)	1.180	1.193	1.205	1.217
2.	Population density (per km ²)		585	591	596
3.	GDP per capita (Rupees at Market price)	91,400	100,700	110,000	117,600
4.	Inflation annual Rate (%)	6.9	4.2	5.4	6.4
5.	Fixed telephone lines	257,099	280,885	306,800	327,225
6.	Mobile Cellular subscribers	102,119	180,000	300,000	336,000
7.	No. of fixed lines/100 inhabitants	21.89	23.53	25.56	27.20
8.	No. of Mobile subscribers/100 inhabitants	8.72	15.12	25.00	27.76
9.	Estimated pc/100 inhabitants	9.57	10.00	10.83	11.50
10.	Estimated household telephone penetration(%)				80.0
11.	Estimated household pc penetration (%)			13.3	18.0
12.	Estimated Internet users	55,000	87,000	158,000	180,000
13.	No. of Internet subscribers (dial-up)	20,000	35,000	41,000	50,000
14.	Estimated household Internet penetration (%)				13.0

SOURCE: ITU, Central Statistics Office, National Computer Board

Table 7 - Average Monthly Expenditure on the Phone Bill

Year	Population (M)	Households	G.D.P per capita (Rs)	Average monthly income per household	Average monthly expenditure on the phone bill per household
1999	1.180	290,300	91,400	Rs. 10,300	Rs. 240
2000	1.193	296,300	100,700	Rs. 11,300	Rs. 270
2001	1.205	305,900	110,000	Rs. 12,340	Rs. 309
2002	1.217	311,300	117,600	Rs. 13,360	Rs. 339

SOURCE: Central Statistics Office

TABLE 8- Services Included in Universal Service Definitions 1999 and 2001

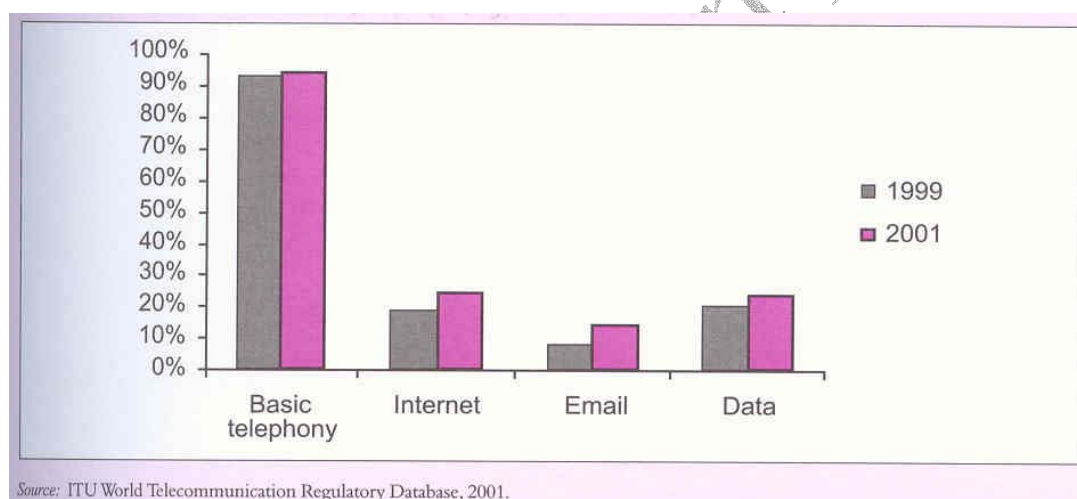


TABLE 9 – Household Telephone Penetration of High Income Economies

ITU REFERENCE	COUNTRY	PERCENTAGE OF HOUSEHOLDS WITH A TELEPHONE (2000)
187	Singapore	97.9
150	Australia	96.8
192	Taiwan-China	98.0
154	Belgium	93.5
157	Canada	97.8
172	Italy	96.9
185	Portugal	79.7
160	Finland	98.0
161	France	94.0
194	United Kingdom	93.0
190	Sweden	98.7
189	Spain	90.6

170	Ireland	83.0
163	Germany	98.2
194	United States	94.1

SOURCE: ITU World Telecommunications Indicators Database

TABLE 10 – Summary of universality access definitions and obligations

Country	Universal Access Policy	Operator obligations
Bhutan	A telephone booth in every village.	No obligations.
Comores	A telephone in every locality.	No obligations.
Costa Rica	Within 1 km of both public and private access.	No obligations.
Cuba	Access to all villages and to communities of more than 500 inhabitants	Licence conditions stipulate by the end of the first 8 year programme all villages of more than 50 inhabitants must have access.
Ethiopia	A telephone booth in every town.	Obligations under preparation.
Guinea	A telephone box for every locality; a telephone exchange for every administration.	Service and interconnection expected; no specified obligations.
Iran	Telephone facilities to all villages of more than 100 people	Expansion, service quality, interconnection and service to the elderly as part of licence conditions.
Kenya	A telephone within walking distance.	A performance contract entails obligations on service quality and expansion.
Kyrgyzstan	A telephone booth in every town; a telephone in every home.	Expansion, service quality and interconnection contracted with the government.
Lesotho	A public telephone within 10 km of any community.	Voluntary objective to be achieved by 2002.
Madagascar	A public telephone in every village.	No obligations.
Maldives	At least one telephone booth per 500 inhabitants; a telephone on every island.	Incumbent operator's licence condition to provide access to basic telecommunication services to the whole country by the year 2000.
Mozambique	A public telephone within a distance of less than 5 km. At least one public telephone in each of the 144 district centers.	Expansion, service quality and interconnection contracted with the government.
Maldives	At least one telephone booth per 500 inhabitants; a telephone on every island.	Incumbent operator's licence condition is to provide access to basic telecommunication services to the whole country by the year 2000.
Mozambique	A public telephone within a distance of less than 5 km. At least one public telephone in each of the 144 district centres.	Expansion, service quality and interconnection contracted with the government.
Pakistan	A telephone in every village.	No obligations.
Togo	A telephone within a 5 km radius 2010; a telephone in every administrative and economic center of importance.	Contract with the state to determine the objectives for development and plurality of service.
Zambia	Telephone booths in public places (schools, clinics, etc.) countrywide	No obligations.

SOURCE: ITU

Table 11- Millennium ICT Goals (High and Upper Middle Economies)

INDICATORS	WORLD AVERAGE
	(2006)
Household telephone penetration	> 90%
Household personal computer penetration	> 50%
Household Internet penetration	> 50%

Source: ITU