Republic of Botswana

Ministry of Communications, Science and Technology

RURAL TELECOMMUNICATIONS STRATEGY

Table of Contents

Glossary

BTA	- Botswana Telecommunications Authority
BTC	- Botswana Telecommunications Corporation
CAC	- Community Access Centre
CSO	- Central Statistics Office
DTPS	- Department of Telecommunications and Postal Services
EIA	- Environmental Impact Assessment
ICT	- Information and Communications Technology
ISP	- Internet Service Provider
ITU	- International Telecommunications Union
MCST	- Ministry of Communications, Science and Technology
MFDP	- Ministry of Finance and Development Planning
MLG	- Ministry of Local Government
MLH	- Ministry of Lands and Housing
MMEWR	- Ministry of Minerals, Energy and Water Resources
MWT	- Ministry of Works and Transport
NDP 9	- National Development Plan 9
RAD	- Remote Area Dweller
RTDF	- Rural Telecommunications Development Fund
SLA	- Service Level Agreement
SMME	- Small, Medium and Micro Enterprises
WITFOR	- World Information Technology Forum
WSIS	- World Summit on the Information Society

Executive Summary

The Rural Telecommunications Program was conceived to address challenges faced in the provision of telecommunications service in the rural areas. The program is intended to assist in integrating the rural population into the economic and social development of the country by affording the affected communities access to telecommunications services comparable to urban areas. Whilst this program has been in existence for more than ten years, the issues and challenges encountered in the implementation of the program has prompted the government to formulate a forward looking strategy that will serve the current market demands. The strategy should be able to bear the evolution of technology and markets in ensuring the provision of essential telecommunications services to the rural population is done in an effective and efficient manner.

The Rural Telecommunications Strategy has defined specific objectives to meet the demand for telecommunication services in the rural areas. The strategy also recommends the development of the Rollout Plan. The Plan addresses the need for stakeholder consultation and the importance of discussing requirements with key stakeholders such as government, parastatals and the private sector has been emphasised. The plan also addresses the critical need to consult with the communities themselves. In addition it recognizes the evaluation of the villages to determine the eligibility and priority for service provisioning under the rural program. It is important to mention that periodic review of the plan is necessary to ensure it remains relevant and up to date.

One of the most critical aspects of the strategy is the acknowledgment of the significance of an appropriate enabling environment. This is in recognition of the pivotal role that a favourable environment plays in enhancing and supporting efficient and effective provision of service. The government is required to continuously assess, coordinate and review the program in order to provide enabling environment for service provision. The government is also responsible to monitor the regulator and operators in order to make sure that the program meets its stated goals and objectives.

The role of the regulator in ensuring the program is executed in a fair and non discriminatory manner cannot be overemphasised. Regulatory intervention is also required to establish and manage a monitoring process. This process must ensure consumers are protected from unfair trade practices and unreasonable costs. The strategy also affirms the requirement of an equitable and efficient regime for management of interconnection, quality of service, and the allocation of limited resources such as frequency spectrum, numbering and rights of way.

It is universally acknowledged that competition is the hallmark of modern procurement practice. The elimination of operator monopoly in the telecommunications sector has also opened new opportunities for innovative procurement methodologies in the delivery of telecommunications services. The implementation of the rural telecommunications program should be subjected to competition and must be in line with the envisaged

further liberalisation of the telecommunications sector. The provision of rural telecommunications services shall be invited through a tendering process. The award of tender should be based on cost effective technology solutions. A new licence framework which is technology and service neutral is proposed to meet the requirement for cost effective and logical solutions in the rural areas. Citizen empowerment is highly desirable in the implementation of the rural program.

The strategy has identified the need to fund the implementation as well as the operations and maintenance of the resulting infrastructure. The strategy is calling for the establishment of a Rural Telecommunications Development Fund (RTDF) which should be funded through public and private partnership. The RTDF, which will be managed by an independent agency, will use direct government subsidies, operators' levies and some funds from BTA to provide the necessary funding for the rural telecommunications program in the short to medium term. The government subsidy will be used initially to fund the infrastructure build stage and the other resources will assist to provide an ongoing operations subsidy. Even though the operator levy is recommended, additional discussions between the Ministry of Communications, Science and Technology (MCST), regulator and other stakeholders are required to finalize the necessary details such as the exact amount to be contributed by each operator It is expected that the longer term funding for the rural program will be informed by the Universal Service Policy.

A monitoring capability must be put in place to appraise the effectiveness of the rural program. A "Program Management Dashboard" has been recommended as the main monitoring tool to be used and managed by an independent funding agency. The dashboard will be used to highlight problem areas in the critical indicators of service delivery, quality of service, funding status, new requirements, and risk management. The rural program monitoring also addresses the vital need to increase cooperation and information sharing between the key stakeholders such as government ministries, the regulator and operators in ensuring the success of the rural telecommunications program.

1 Introduction

It has become clichéd in the information society that access to ICT services is a prerequisite to any meaningful socio-economic development. It is in this regard that the Government of Botswana embarked on drafting Maitlamo, the National ICT Policy; the formulation of Universal Service Policy and the further liberalisation of the telecommunications sector. These efforts are in line with international initiatives such as the WSIS Declaration of 2003 and the WITFOR Gaborone Declaration of 2005 to which the Government of Botswana is signatory. As nations promote economies based on the exploitation of information in this age, developing countries such as Botswana are faced with particular challenges relating to the availability and cost in providing rural infrastructure.

It is undeniable that demand for telecommunications services in Botswana far outstrips the current level of services provided. Despite sectoral liberalisation brought about by the implementation of the 1995 Telecommunications Policy, telecommunications services have not trickled down to the rural areas. This causes dissatisfaction among the populations living in the rural areas who feel marginalised.

The costs of providing infrastructure to rural Botswana is immense and for the most part, there is little commercial basis for doing so. The large distances between communities, the difficult terrain, harsh climate conditions and the small scattered population in the rural areas all make it very costly for commercial operations. Against this background, Government recognises its social obligation to improve the standard of living for all citizens more especially in the rural areas. It is in light of this recognition that for more than ten years it has promoted and funded rural connectivity.

Unfortunately these efforts have not lived up to all expectations and many communities remain unconnected. Concerns and issues raised by several stakeholders in relation to the implementation of the rural telecommunications program have prompted the Government to revisit rural telecommunications. It is this review process that has determined the need for drawing up a new strategy in order to accelerate progress.

The directions, positions and measures outlined in this Strategy are intended to establish a comprehensive and balanced approach to ensuring telecommunications services are provided to the generality of rural Botswana on the basis of need. A framework for moving the Government's ICT agenda forward has been articulated through this effort.

This strategy lays the foundation for an accelerated expansion of infrastructure and services to the rural communities. It will increase competitiveness in the telecommunications sector, enhance opportunities for growth, capacity building

and provide critical and life saving support as required. It directs that ongoing evaluation and analysis be conducted to ensure the effectiveness of the rural telecommunications program in delivering the expected benefits as well as to ensure the Government's economic and social development goals are met.

2   Background

The rural telecommunications initiative was undertaken in recognition of the critical role that telecommunications plays in socio economic development. The Rural Telecommunications Program is intended to address access gaps for rural communities. The program is more than ten years old. To date four projects (Borolong, Tuli Block, Tswapong and Nteletsa) have been implemented and connected over two hundred and thirty (230) communities. By the end of December 2004, there had been a number of concerns raised about the program and the growing dissatisfaction with the service being provided.

Previously Botswana Telecommunications Corporation (BTC) was exclusively responsible for the design, implementation and maintenance of the rural telecommunications infrastructure. The appointment of BTC seems to have been motivated by factors of capability and capacity.

The major challenge facing the implementation of the program is poor service delivery. During the implementation of the latest project, *"Nteletsa",* it was suggested that the roll-out of the infrastructure was to take place during a 12 month period, but the actual roll-out extended beyond a twenty four month period. The service delivery concern was to some extent due to the license restrictions on BTC, as only fixed telecommunications technology could be utilized to deploy voice services to the communities. This has hindered the potential use of other newer and cost effective wireless technologies and has resulted in potentially more costly solutions.

In the past, the criteria used to include localities in the program were unclear. The roll-out plan for the program was not identified in advance of deployment. The other concern is that services have tended to be provided in those areas that are near to the existing telecommunications infrastructure. The result of this is that telephone density has increased substantially in some parts of the country while others lag far behind. It was thus difficult for the public to surmise the program coverage and the justification of such coverage. The District basis of the program implementation further meant that other Districts were left behind.

When the government funded rural deployments as part of the program, they only funded BTC to deliver services to the rural communities. The government did not fund the mobile operators for their efforts, nor did they engage the mobile operators to participate in the rural program. This has been mentioned as a hindrance to fair competition under a liberalised environment.

In addition, the government only funded the capital expenses associated with deploying services. The operations and maintenance costs of the resulting network were passed on to BTC. The service take up from the rural communities is so low that significant losses have been incurred due to the high costs of operating and

maintaining the services. As a result, maintaining the rural areas has typically been assigned the lowest priority. This has meant significant delays in repair or service related problems and resulted in an unacceptable quality of service for the users.

There are also several network deployments into the rural areas that have been undertaken by various ministries, departments and parastatals. There are also a number of government programmes and activities involving the rural areas. These programs are not co-ordinated and aligned. There is no doubt that there is clear duplication of facilities or unnecessary repetition of work efforts resulting in inefficient use and higher costs.

In view of changing ICT environment resulting from varying customers' requirements, rapid technological changes as well as competition in the market place, the government has found it necessary to formulate a new strategy to deliver service to rural communities. It is envisaged that the strategy will address the above mentioned concerns and make the delivery of services more transparent, efficient and cost effective.

3   Development of the Strategy

The Rural Telecommunications Strategy is the culmination of several elements comprising stakeholder consultations, village surveys, detailed analysis, discussion points and recommendations. The strategy was developed with the assistance of more than sixty organisations from government departments, private sector and non governmental organisations throughout the country. The strategy is a synopsis of the key deliverables that have preceded it. The following gives a summary of complementary reports that have been issued in the course of the formulation of the strategy. The detailed reports are available for reference.

Goals and Objectives - This report sets out the rural telecommunications program goals and objectives. The goals and objectives take into account the provision of services, the use of cost effective technologies, the use of appropriate funding models and the introduction of competition. The report also contains the definition of rural as it relates to the provision of telecommunications service and establishes the eligibility criteria to be applied to a village to see whether it qualifies for the rural program.

Implementation Strategy – The Implementation Strategy addresses and makes recommendations on regulatory, commercial and technical issues. It also declares the operations, maintenance, and funding concerns of the program. It is this document which outlines the requisite licensing framework and interconnection regimes for the successful implementation of the program. It further charts an appropriate funding model envisaged to secure the rural program sustainability. Licensing and interconnection templates for rural telecommunications model have also been developed.

Rollout Plan – This deliverable provides the framework and guidelines for the rollout of the program. It calls for the transparent identification of eligible villages which must be provided with service under the program. In addition, it recommends that the identified villages should be prioritised and grouped according to the criteria developed in the report. The report recommends the division of the country into four areas for purposes of financial sustainability, logical network implementation and operational efficiency among several reasons.

Selection and Monitoring – An open tender process has been recommended to be used to provide services in the rural areas in order to enable a competitive environment in service provisioning. The report focused on the issues and resources that will be required to implement the program via the open tender process. This deliverable has produced templates that will be used during the tendering process. A service level agreement template for the monitoring of the operations and maintenance of the resulting infrastructure has also been developed.

Program Management and Monitoring – The primary objective of this report is to ensure that the monitoring of the program as a whole is sufficient for the long term sustenance of the rural program. It has appraised the current organisation set up of the Department of Telecommunications and Postal Services (DTPS) which is responsible for the rural telecommunications program within government. The deliverable seeks to map the appropriate structure and resource requirements for the DTPS in order to meet current and future needs both within the rural telecommunications program and ICT in general. It recommends an ideal re-organisation of the department including associated staffing levels, duties and functions to be considered for the DTPS as well as linkages, structures and processes for related organisations. It also calls for the cooperation and coordination among the key stakeholders such as the regulator, operators and other government departments for the successful implementation and monitoring of the rural program.

Network Infrastructure Standard – This deliverable provides the minimum standards requirement for the implementation of the telecommunications network. It also supplements the tender documents developed in the Selection and Monitoring deliverable.

4 Definitions and Rationale

In order to understand the benefits and features associated with the rural telecommunications program, it is important to understand the role telecommunications plays and how the program fits to other government programs with regard to achieving the broad objectives of delivering services to the rural areas.

4.1 Definition of Rural Telecommunications

In the context of telecommunications, rural refers to isolated and poorly served areas where various factors interact to make the establishment of acceptable telecommunication facilities and provision of quality services difficult. Rural telecommunications program is targeted at specific areas of the country where the government has identified that essential basic services are required as part of its social obligation to integrate people into the economic and social development of the nation. It does not address urban or near urban areas where market forces prevail for provision of telecommunications service within a reasonable time frame, nor does it targets those larger communities that currently have service and require additional infrastructure.

4.2 Rationale for Rural Program

The strategy takes into consideration policies and positions that have been expressed by government and its various organs in relation to the provision of services to the rural areas. Vision 2016 clearly asserts the significance of telecommunications in ensuring all in Botswana, especially those in rural areas and those who need special support receive adequate assistance.

The National Settlement Policy of 1995 calls for all basic infrastructure and services to be provided to all settlements with a minimum population of 250 people. The 1995 Telecommunications Policy proclaims that access to basic telecommunications services is a citizen right and must be made available to all users in Botswana, independent of geographical location and at an affordable price.

The most specific direction is found in the National Development Plan 9 (NDP9), where it recognizes that penetration of ICTs, especially in rural areas, is essential to accelerate the pace of development towards the rapid integration of the country within the global economy. The Draft National ICT Policy also calls for the provision of electricity and internet access for remote and rural communities to ensure equity and universal access.

All of these directives and policies are cohesive in highlighting the need for the deployment of services in the rural areas. The precepts are clearly and

consistently identified, and provide ample justification for the dynamic government intervention in the delivery of telecommunications services to the rural areas.

5 Goals and Objectives

Effective and efficient ICT infrastructure (including telecommunications) is essential for increased efficiency of economic, commercial and administrative activities. It also improves the effectiveness of social and emergency services and distributes the social, cultural and economic benefits of the process of development more equitably throughout the country. The goal of the Rural Telecommunication Program is to provide telecommunications services to the rural areas in the most cost effective, efficient, logical and transparent manner possible.

The following underlie the objectives of the Rural Telecommunications Program:

i) Provide voice and data services

ii) Deploy cost effective technology solutions

iii) Use appropriate and sustainable funding models

iv) Ensure necessary support infrastructure is in place

v) Introduce competition in the delivery of services

vi) Align and coordinate the provision of services

6 Rollout Plan

The Rollout Plan shall present a master plan for the deployment of telecommunications services across the entire country that covers a wide variety of geographical areas and related demographics. The development of this plan shall strike a balance between the issues and concerns that had been identified during the previous programs and the variety of views and opinions expressed by different stakeholders. The plan shall also identify equitably what is required in each community so as to ensure the infrastructure that will be deployed can accommodate the current and near future demand for services. The Rollout Plan shall therefore provide critical information on the potential market demand so that an assessment of the business potential can be made.

To ensure there is maximum public buy-in at all times, the rollout plan shall be reviewed after each and every implementation. The following issues shall be addressed as part of the development of the rollout plan.

6.1 Community Consultations

The consultations of key stakeholders such as public, government and the private sector are necessary to ensure that the various demand components driving the requirement for telecommunications in the rural areas are identified and addressed. This discussion ensures that different perspectives, needs, and positions are carefully considered before making decisions. This also ensures that the process used to make decisions and take action is done in an open and transparent manner.

To better understand the situation faced by rural communities, visits must be conducted to consult communities. The consultations will afford an opportunity for the communities to share their ideas and needs in terms of telecommunication services. The community visits must also collect data that will provide an "on the ground" assessment of current telecommunication requirements in the communities.

6.2 Development of the Criteria

The criteria for selecting the localities to be included in the Rural Telecommunications Program as well as for determining the priority for providing services are a critical aspect of ensuring an open and transparent process. The criteria assist to meet the objectives of the rural telecommunications program and allow it to be implemented in an effective way. The criteria also address issues and concerns that have been identified in earlier rural programs.

The criteria shall be reviewed regularly using available data collected from a variety of sources. A variety of non-governmental organisations, private organisations, government ministries and departments shall be approached for necessary information that will be used to develop the criteria. The facts provided by these organizations will allow the criteria to be applied consistently across the spectrum of localities. To ensure fairness, only criteria that can be applied to every locality should be used in the determination of the new rollout plan.

In order for transparency to be achieved, the criteria for evaluating localities shall be analysed and presented in the Rollout Plan. Transparency is critical to encourage acceptance and support for the program. Citizens need to embrace and utilise the services being provided. The public can only support, enhance and effectively utilise the program if they see that the program is being implemented in a fair and equitable manner.

6.3 Eligibility Criteria

The eligibility criteria analyses localities in order to see whether they qualify to be provided with service under the rural program. It is very important that a continuous review of the criteria is undertaken to duly capture any changes that may occur.

For a locality to be eligible for provision of service under the Rural Telecommunications Program, the locality in question shall meet the following criteria:

i) Have a population between 250 and 1500

ii) Have not been covered by the Rural Program since 1995

iii) Qualify as a special case, such as
    - Remote Area Dweller (RAD) communities
    - Border Posts
    - Permanent Veterinary Inspection Points
    - Locality with a population of less than 250, but have a Primary school

6.4 Prioritization of Localities

In the event that funding for the rollout of infrastructure and services is limited, it will be necessary to deploy infrastructure in a phased manner. Prioritization criteria shall be applied to assist with the determination of localities where the needs are greatest relative to each other. The focus must be on determining how the unique localities can be fairly assessed so as to decide which warrants the highest priority for service rollout. The criteria must reflect

aspects of the localities while highlighting the differences between them, and shall be based on available information. The criteria shall present the locality needs in a transparent and fair manner, and thus allow for an accurate assessment. The current prioritisation criteria are identified as:

    i)   Demand

    ii)   Cost

    iii)   Economics

    iv)   Government Services

    v)   Socio-Political.

6.5 Publication

The Rollout Plan which shows the list of eligible localities shall be published so that each and every individual is aware of when their village will be provided with service.

7   Regulatory environment

An enabling environment needs to be created for effective and efficient service provisioning. Regulation shall ensure that the telecommunications requirements of the rural population are met through specific market interventions. In particular, the licensing of telecommunications service providers including provisions and obligations shall guide the process of service provision. The provision of service in the rural area shall be in line with the liberalisation of the telecommunications industry.

7.1   Licensing Framework

In Botswana, telecommunication licenses are currently issued in terms of service. Historically this has been distinguishable and easily separated as data and voice (broken down into mobile, international, and fixed).

The provision of telecommunications services to the rural areas shall be provided by licensed operators under a new and special license category to be known as "Underserved Area Licence". The identified technology solution providing the most economical and cost effective solution from a financial and implementation point of view shall be implemented. It is therefore recommended that a service neutral licence shall be issued for rural areas. This will prevent the situation whereby costly deployment solutions are being forced due to licence conditions. To ensure efficiency, both economically and socially, the localities shall be grouped together into Underserved Areas for the purpose of awarding the licences.

The process leading to the award of the licence shall be as objective as possible. An open tender process shall be used to select the best service provider to provide service for each rural license area. The successful bidder shall be awarded an Underserved Area Licence by the regulator. The new category of licence shall be aligned to the proposed further liberalization timelines. The modalities of the license shall be discussed between the Ministry of Communications, Science and Technology (MCST) and the regulator.

The format of the licences thus issued will, in addition to the standard terms and conditions also include an annex which will comprise a mandatory rollout plan stipulating the localities to be provided with telecommunication services and the specified timeframes by which the services shall be provided. In addition, the service providers shall be mandated to provide consumers with access to a directory information service and emergency services such as the police, ambulance, fire departments, etc.

7.2 Allocation of Scarce Resources

The required scarce resources in the provision of telecommunications service such as spectrum, numbering, and rights of way shall be addressed through the issuance of separate and specific licences. Frequency spectrum shall be allocated through a separate radio licence. Numbering and rights of way shall be incorporated within the systems licence. Both the management and allocation of spectrum and numbering shall be carried out by the regulator

7.3 Consumer Protection

Monitoring shall take place to protect the consumer from high costs and poor quality of service. The regulator shall be responsible for monitoring and establishing a procedure for consumers to follow when they have complaints.

7.4 Interconnection

Interconnection is one of the most significant market entry barriers in the telecommunications sector. Without appropriate interconnection administration, the market is distorted in favour of incumbents. To address this familiar challenge and to promote the sustainability of both traditional and alternative business models, costs associated with interconnection shall be optimised.

Regulatory intervention is required to establish and manage a modified interconnect agreement process for the rural areas. The process must ensure agreements are quickly concluded and rates are correctly set to enable the operators to build and sustain a viable business model. As a pre-emptive measure towards the attainment of this goal as well as to minimize costs associated with interconnection, it is required that:

i) Interconnection shall take place at the nearest and identified technically feasible points.

ii) The interconnection agreement shall be concluded by concerned operators within a maximum period of 60 days or it will automatically be adjudicated by the regulator.

iii) Interconnection fees shall be cost based and the rates prescribed.

7.5 Infrastructure Exclusivity

Infrastructure exclusivity refers to the exclusive use of the new infrastructure provided through the Rural Telecommunications Program. Where applicable, the service provider that is chosen to provide service to each rural licence area shall be given exclusive use of the associated infrastructure for a proposed period of 5 years from the date of service availability and commencement.

Access to the market cannot be restricted under the current exercise without abrogating rights already conferred on the existing national operators. Infrastructure exclusivity shall apply in the case of a new entrant and will not apply to the existing national voice operators (including Mascom, Orange and Botswana Telecommunications Corporation). Subsequent to the 5 year period, the infrastructure exclusivity shall be removed and all licensed service providers shall be allowed to utilise the rural telecommunications program infrastructure in offering services to the citizens in that particular rural licence area. Terms for such usage shall be commercially negotiated between the concerned parties under the applicable conditions.

7.6 Cross Border

Provision of utility services such as water and electricity across the borders of neighbouring countries is common regionally and internationally. However, under the current regulatory framework, cross border telecommunications service provision is not allowed. There is capacity to provide service in these areas within Botswana. It is therefore recommended that the regulatory framework should permit the provision of cross border telecommunications.

8   Services

Telecommunications services are growing in importance for all the sectors of the economy including education, health, agriculture and other development initiatives. *Maitlamo*, the Draft National ICT Policy, clearly states that all schools and clinics in Botswana are to be connected with telecommunications capabilities.

It has become a necessity that the general human resource development systems embrace and strongly use ICT in order to prepare Batswana to engage the global society. This function is critical and central to the future prosperity and development of Botswana. The Rural Telecommunications Program shall therefore ensure these capabilities are developed and provided in every community.

8.1   Services Offered

Voice, internet and data services shall be provided in the rural areas to assist these communities to become more economically and socially sustainable. The rural public shall also have access to directory information and all emergency services.

8.2   Affordability

Given that disposable incomes in rural areas are low, it is imperative to look beyond the traditional business and residential access. Public access at a nominal cost shall therefore be provided using a Public Pay Phone and/or Community Access Point. This will make available an affordable alternative to personal ownership of communications equipment such as telephones, computers and internet connectivity. This would also minimize the high cost of providing services to the rural areas.

The implementation of these Public Pay Phones and or Community Access Points shall be negotiated between the individual communities and the applicable service provider. It is recommended that the setting up of these Community Access Points should be implemented through public and private partnership arrangement.

9 Program Implementation

Telecommunications is a catalyst for socio–economic development. Lack of service in the rural areas is hampering the development of those areas. The people living in the rural areas are also desperately in need of telecommunications services.

The rural telecommunications program shall be implemented in the most timely, efficient and cost effective manner possible. The implementation of the program shall also be in line with the envisaged further liberalisation of the telecommunications sector.

9.1 Introduction of Competition

The implementation of the rural telecommunications program shall seek to introduce competition in the provision of telecommunications infrastructure and services. In line with current government procurement guidelines, an open tender process shall be used to select the best service provider for each rural license area.

9.2 Cost Effective Solutions

When rolling out telecommunication services, optimum network deployment practices in the areas of economics, topology and environment conditions, shall allow service providers to be more efficient and effective. In order to achieve this, the principle of cost effective and logical technological solutions shall be adopted. Associated technical and business plans shall make economic sense and allow for the level of service the rural areas need.

Notwithstanding infrastructure exclusivity, the best approach to further minimize costs is to leverage what is available and to share resources wherever possible. The costs of providing separate infrastructure could be prohibitive in the short to medium term. In order to reduce costs and to utilize the scarce resources to their maximum capacity, it is recommended that network infrastructure shall be shared where possible. A fair, equitable, and transparent mechanism shall be introduced through licensing framework. The rate structure for the rental of space on the infrastructure shall be prescribed by the regulator.

In order to take advantage of global pricing and to minimize operations and maintenance costs, only standardized solutions shall be acceptable. In addition, there are physical infrastructure specifications that must be followed to ensure the network is robust and operates with minimal down time. All the

network solutions shall comply with the Environmental Impact Assessment requirement.

9.3 Build, Operate and Maintain

Implementation of the telecommunications networks involves many phases such as network design, build, operate and maintenance. Problems encountered in the deployment of networks tend to cascade from one phase to another because there are dependencies spanning from the design to maintenance phases. It is therefore recommended that one service provider shall be responsible for building, operating and maintaining the infrastructure in each identified rural licensing area. This will ensure that there is a single organisation ultimately responsible for all issues, regardless of where they originate. Having one point of responsibility is critical to ensure the service provider is accountable for the ultimate quality of the service delivery.

Combining the three responsibilities reduces the turn around time for the development of knowledge and capacity required for implementation, operations and maintenance of the network. It is difficult for an organisation to operate a network they were not involved in during the building phase as there are left over issues that are typically not easy to resolve and the level of knowledge is usually not adequate. It can further jeopardize the opportunity for successful implementation of the rural program. That is why it is advocated for one operator to build, operate and maintain.

9.4 Botswana Registered Companies

In line with the current directives and future government citizen empowerment policies, every opportunity must be given to encourage the use of local resources in the implementation of the rural program. Botswana registered and citizen owned companies shall be given preference to the maximum extent possible consistent with the safety, efficiency and economics of the network operations. The employment and provision of training opportunities for Batswana shall be recognized and given priority in the selection of the potential service provider.

9.5 Ownership

In the event that the government contribute towards funding to build the networks in the rural areas, the government shall co-own the assets involved. Government ownership also ensures that, if necessary, the operator can be replaced with the least amount of impact.

The government may transfer ownership of the assets associated with each licence area to the service provider, however this is subject to satisfactory performance as will be outlined in the performance contracts (SLA). This is expected to take place no less than 10 years after the issuance of the licence to the service provider. If there are major concerns on service provision or other pertinent areas, the transfer of ownership shall be delayed until a satisfactory situation is established.

10   Program Funding

Funding of the rural telecommunications program shall cover the cost of implementation, operations and maintenance. It is recommended that a Rural Telecommunications Development Fund (RTDF) be created which will be funded through public and private partnership arrangements. The overriding consideration is to ensure sustainability and to see to it that the mechanisms adopted is seen to be promoting contributory and distributive fairness. With telecommunications playing a key role in social and economic development the levy mechanism shall be designed such that it takes into consideration all stakeholder interests in order to gain widespread support.

This funding approach shall provide immediate relief for the provision of telecommunications service to the rural areas in the short term. The funding mechanism shall ensure the provision of access whilst at the same time ensuring sustainability. Funding shall meet the requirements for transparency, fairness and proportionality as well as allowing flexibility to meet future requirements. The long term funding of the rural telecommunications program shall be informed by the Universal Access and Service Policy.

10.1   Funding of RTDF

Funding of RTDF shall come from direct government subsidy, operators levy and funds from the BTA as reported from their financial statements. Initial funds for the RTDF shall come from a direct government subsidy and shall be used for the capital and operational expenditure associated with rolling out the infrastructure. Other sources of funding shall augment the continued direct government subsidy to support the operations and maintenance as required.

Payment of the operator levy shall be applicable to all licensed public telecommunication operators. Private network operators as licensed by the BTA are excluded as their network is not public and they do not derive income from their network. The licensed operators include:

i)   **National telecommunications operators**

These include all licensed telecommunication operators operating a public network.

ii) Data operators

These include all operators licensed to provide public data services and who are also licensed as public operators

iii) Internet Service Providers (ISP)

These include all operators who operate a public network that allows them to provide both internet and data services.

Once the amount of funding has been determined, the operator levy shall be extracted on the basis of net turnover of the operator as defined by BTA. The operators currently pay an annual licence fee of 3% of net turnover to the BTA. In view of this it is recommended that an additional levy be introduced ranging between 0.5% and 2% to cover for the operations subsidy of the rural telecommunications. This will result in the operators paying a total levy of between 3.5% and 5%. The specific amount shall be agreed between the MCST and the regulator based on the reported turnover.

10.2 Implementing Agency

The RTDF shall be implemented by an institute that is independent. International best practise shows that such funds are better implemented by an independent agency with a specific mandate which would provide more clarity and legitimacy. The administering of the funds works well when managed by neutral parties who can be unbiased in the allocation of funds. This is so justifiably in order to avoid potential conflict of interest and ensure transparency in fund management. As an interim measure, it is recommended that the MCST takes up the role of the implementing agency. The future fund management implementation shall be informed by the Universal Access and Service Policy.

10.3 Operations Subsidy

The subsidy to support the ongoing operations costs for sustaining services in rural areas shall be based on a formula that considers the service provider's commitment, record of service delivery, and ability to operate and maintain the network. This subsidy shall be reviewed by the Implementing Agency as mentioned in 10.2 above on an annual basis to determine the appropriate amount and if the subsidy is still required. The service provider shall take appropriate steps in their annual business plan to reduce the required subsidy as much as possible.

11 Program Monitoring

The Rural Telecommunications Program is more than the implementation of physical infrastructure projects, as it also includes processes and activities that will help with designing the new environment and guiding its transformation. A monitoring function shall be implemented to monitor the regulatory agency and operators so as to measure the effectiveness of the policy and assess if government goals and objectives are being met.

11.1 Monitoring Dashboard

A monitoring capability shall be put in place to appraise the effectiveness of the rural program. A "Program Management Dashboard" shall be created as the main monitoring tool to be used by the government, regulator, operators and other key stakeholders. The Implementing Agency shall be responsible for managing and monitoring the dashboard. The dashboard shall be linked to and provide updates to the National Vision indicators as required.

The dashboard shall be used to highlight problem areas in the critical indicators of service delivery, quality of service, funding status, new requirements, and risk management. The monitoring shall include items such as:

i)   Basic utilization and take up statistics

ii) Qualitative assessments of the impacts, such as faster response to either education or health service delivery that might be attributed to the installation and utilization of the telecommunications infrastructure and services,

iii) Some measurement criteria for monitoring the effectiveness of BTA, and

iv) Additional reports and measurements to address the effectiveness of the operators in increasing their business and reducing the subsidy requirement.

11.2 Key Stakeholder Participation

Participation, cooperation and information sharing amongst the key stakeholders in the rural telecommunications program shall be promoted as part of the program monitoring. More specifically, attention must be paid to the ongoing interaction and updates related to:

i)   Rural program deployment measurement

Botswana Telecommunications Authority (BTA) shall measure and report on rural teledensity and service provider performance, while the various service providers are to measure and report on subsidy related information and customer connection status, all indicators of the progress towards achieving the goals of the Rural Program.

ii)   Enabling environment

MCST shall continuously update, coordinate and review the rural telecommunications program in order to provide an enabling environment for provision of service. MCST shall also make sure that the program is aligned to other government programs.

iii)   The classification of communities

The Ministry of Local Government (MLG) shall assist with identifying and providing a list of potential localities that should be included in the Rural Telecommunications Program.

iv)   Rural development planning and budgets

The Ministry of Finance and Development Planning (MFDP) shall ensure budget allocations and rural development plans are consistent and aligned with the intentions of the program.

v)   Statistics

The Central Statistics Office (CSO) shall collect and analyse data on the utilisation and impact of telecommunications on the economy. This information shall be used to provide direction and support for future considerations.

vi)   Availability of power

Power is required for the operations of the telecommunications network. The Ministry of Minerals, Energy and Water Resources (MEWR) shall provide electricity as well as to ensure that the rural electrification program is aligned to the rural telecommunications program.

vii) Availability of rights of way

Rights of way are required to roll out telecommunications infrastructure. The Ministry of Works and Transport (MWT) shall provide space along the national road network for installation of the required infrastructure to link the villages.

The MLG, which is responsible for the apportionment of rights of way along the road networks in the villages, shall provide space for installation of the required infrastructure to connect individual customers.

viii) Availability of land

The Ministry of Lands and Housing (MLH) shall provide land where the network infrastructure will be built and housed.

ix) Government–on–line

Department of Information Technology (DIT) shall utilise the rural network to expand and extend the Government Data Network (GDN) and connect all government offices in the rural areas. All other government ministries and departments shall align their computerisation projects to the rural telecommunications program in order to connect their offices in the rural areas.

x) School connectivity

Ministry of Education (MOE) shall align the school connectivity initiative with the rural telecommunications program so that all schools in the rural areas are connected to the network in order to implement the *ThutoNet* programmes.

xi) Better patient care

Ministry of Health (MOH) shall align their ICT based health programmes to rural telecommunications program in order to connect clinics in the rural areas to the network. This will enable rural Batswana to have access to health services and information.

xii) National security

Security and law enforcement agencies including, the Police (BPS), military (BDF), and Department of Immigration shall align their connectivity programmes with the rural telecommunications program to provide connectivity to their offices in the rural areas. This will

allow them to effectively deal with incidents and issues of national security that might take place in the rural areas.

xiii) Emergency services

The MLG, MOH and the Police shall improve coordination of emergency services and disaster management. Provision of emergency telephone services shall be housed under one roof in a bid to reduce the cost of providing telecommunication services.

xiv) Business opportunity

The Ministry of Agriculture (MOA), MEWT and MIT shall strengthen the traditional industries in the rural areas by coming up with appropriate initiatives that must be aligned to the rural program. The farmers, tourist operators, small businesses and youth shall take advantage of and utilise the resulting network to improve their productivity, sales and marketing, and disease prevention.

Ministry of Labour and Home Affairs (MLHA) shall also encourage youth and SMME by developing and implementing programs to provide support to companies and individuals so that they can benefit from the rural program efforts.

12 Key Stakeholder Roles

The Rural Telecommunications Program has been developed to provide basic telecommunications services in the rural areas and thus improve the quality of life. All stakeholders shall participate and contribute towards the successful implementation and utilisation of the rural program. There is no doubt that this program will assist in meeting the economic and social development of the country.

12.1 Government

The government shall continuously develop and review the sector policy framework in order to provide an enabling environment for provision of service. The Government shall oversee and manage the rollout of appropriate infrastructure. The Government shall also establish a monitoring mechanism for both the operators and the regulator in order to ensure that the program is effectively implemented.

The Government shall also establish a funding mechanism to ensure that operation and maintenance costs are funded accordingly. Government ministries and departments are urged to enhance their coordination efforts in a bid to boost efficiency.

12.2 Regulator

The regulator's role is to ensure the program is executed in a fair, transparent and non-discriminatory manner. The regulator shall also ensure that an enabling environment exists for the provision of telecommunications services to the rural areas in line with the aspirations of this program.. Regulatory intervention in the areas of licensing, interconnection, fees, tariffs, numbering, spectrum and customer complaints are required to be established and managed as part of monitoring process. The regulator will also monitor the operators' performance and protect consumers against abuse. The regulator will also make sure that the program is equitable to all parties and allow for quick and efficient dispute resolutions.

The regulator shall collect funds from levies or licensing activities to support the Rural Telecommunications Program as provided for by the law. They are also to contribute towards the cost of operating and maintaining the operations of rural networks in the form of excess funds.

12.3 Service Provider

The service providers shall manage the operations and maintenance, service delivery including the customer and marketing associated activities. Their efforts will determine the ultimate success of the program. Service Providers shall also share the cost of operating and maintaining the provision of service by contributing to the RTDF through payment of the levy.

12.4 Consumer

The consumer shall embrace and effectively utilize the services provided under the program. This will involve assisting with the cost recovery and development of a sustainable solution by paying for the services used. The consumer shall also respond to service provider evaluations and customer feedback in order to assist the regulator and service providers in maintaining an acceptable standard of service quality.