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2005-12-15

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http://hdl.handle.net/10539/19804

Van Leijden, F., & Monasso, T. (2005). Beware dongas! An assessment of the road ahead for under-serviced area licensing for telecommunications operators in South Africa. The Southern African Journal of Information and Communication (SAJIC), 6, 22-47. https://doi.org/10.23962/10539/19804

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ABSTRACT: In 2001 the South African Government began the process of Under-Serviced Area Licensing (USAL) as a major effort aimed at getting telecommunications into deep rural areas throughout the country. The USAL policy has three objectives: universal service and access; black economic empowerment; and stimulation of market competition. To fulfil these three objectives, the policy has to take into account the tensions that exist between the three objectives. The South African USAL process is not designed to mitigate these conflicts and is, therefore, unable to attain the objectives. While the policy is aimed at offering community-based and community-owned organisations the opportunity to provide telecommunications services, the licensing process and the licence conditions do not reflect this. Financial and educational support from the Government is minimal. Both the licensing process and the business process of building a telecommunications network are expensive, and gaining capital is difficult for these small companies. It should also be noted, regarding the business case of the companies, that while at the outset this case was already fairly weak, changes to the licensing conditions and a saturating cellular market over time have further seriously weakened this business case, rendering the viability of the companies questionable. For the process to be successful, Government bodies have to provide more support to the companies, and propagate a stable and clear regulatory environment.

Introduction

Countries all over the world are struggling with the "digital divide", where some parts of a country are highly developed and have access to advanced telephony and broadband services and other parts of a country have little or no access to these services. The access to services is partially dependent on geographic and socio-economic characteristics of a country. Reflecting a very high Gini coefficient (Gini-index of 57.8, World Bank Group, 2005) communication access in South Africa is highly skewed. South Africa consists largely of rural areas with a low people density and limited access, and economically active urban conglomerations where a limited range of competing services is available. The country has tried several options to extend the fixed telecommunications network, but with little success. The latest project is the awarding of Under-Serviced Area Licences (USALs). The aim of awarding such licences is to reach universal service objectives and to empower historically disadvantaged groups. The chosen path is to give small, locally owned companies the opportunity to provide telephony and other information and communication technology (ICT) services in under-serviced areas, defined as such by the Minister of Communications.

During the first round of the licensing process, in which seven licences were issued, a number of studies (Gillwald, 2002; Smit, 2004) examined the licence conditions, the viability of the licensees and the licensing process itself. These studies question the viability and the choice of the licence conditions. Now, a few months after the first licences have been issued, the time has come to add to these *ex ante* studies more insights from the operational side. In the meanwhile, several changes have been made to the licensing conditions and the process. The focus of this study is on identifying the main opportunities and threats faced by licensees within the current regulatory environment, and further identifying possible opportunities to increase the chances of reaching the universal service and empowerment objectives.

The main research question here is: What threats and opportunities exist for the objectives of the under-serviced area licensing (USAL) policy in South Africa due to regulatory, market and operational factors?

This question is split up into the following sub-questions:

- What are the different objectives of the USAL policy?
- Is it possible to combine these different objectives?
- How viable are the business models of the licensees?
  - What is the effect of the current licensing conditions and the regulatory environment on the viability of the business models of the licensees?
  - What is the effect of the current and future market conditions on the viability of the business models of the licensees?
  - Do operators currently have the appropriate resources to run their businesses?
- What opportunities can be identified to increase the viability of the USAL policy?

The study's focus is on the first licensing round and the seven licensees that have obtained a final licence. While the Independent Communications Authority of South Africa (ICASA) has started with the second round of licensing (Gazette 27166), it is too early in the process to discuss any operational issues. Lessons from this study can certainly be used for the third round coming up but, where possible, adjustments to the second round could be made. While such improvements in the current South African conditions would probably be of interest to the Government, operators in the under-serviced areas, equipment vendors, current operators that are willing to provide outsourcing services and the people requiring access, the lessons learnt could also contribute to the international knowledge base on network extension in rural areas, thus supporting the successful design of a universal service policy.

Previous theoretical studies and lessons learned in other countries contribute to this study. The main sources of information are seven in-depth interviews with the involved

parties, among which are the licensees,[1] the regulatory authorities and the national telecommunications operators. The issues mentioned by the interviewees are reflected against the available scientific knowledge, and consequently several opportunities are identified.

Throughout this article a model that addresses the different policy goals involved will be worked out. The model functions as a stylistic synthesis of existing theories and case studies, as it addresses the conflicts inherent in the combination of different goals. Moreover, it includes common ways to mitigate them. The conflicts will be used to describe the tensions within the South African USAL policy. Finally, the model will be extended, with a deeper layer in which social and cultural influences on the policy are included. It is important to recognise that the model is a synthesis of both theoretical and empirical knowledge; the model was only constructed after the empirical research underlying this article. The fact that the policy conflicts could also have been identified on a theoretical basis illustrates that the empirical evidence supports theoretical notions to a great extent.

This article starts with a description of the current USAL system, and proceeds to analyse the objectives contained in the USAL policy – including analysing possible conflicts identified. Thereafter, the article provides an overview of the major changes since the commencement of the licensing process. An analysis of the sector structure and culture, combined with a deeper look at the policy objectives lying behind the USAL objectives, serves as the bridge to the conclusions and recommendations. Finally, a reflection on this research and on the USAL framework is offered.

Description of the initial USAL system

In 1995, the South African Government began preparations for a new telecommunications policy, suitable for the new democratic era. The key elements of the new policy have been laid out in the White Paper on Telecommunication, which strongly emphasises the need to provide universal service, to evolve towards a more liberalised market structure and to account for the empowerment of historically disadvantaged people (Gazette 16995). The White Paper cleared the path for the Telecommunications Act of 1996. However, this act did not include provisions for regional telecommunications services by other means than through the fixed-line

1 It has been very difficult to get in touch with the USAL operators themselves from the first round, to gain insight into their views on the policy process and their business models. It transpired that the major existing operators are more accessible. This may have led to a bias in the source material for the research. However, as far as possible, this article has attempted to balance the viewpoints of all organisations involved. The inaccessibility of some organisations, including some Government bodies, in itself serves as interesting data; it says something about the lack of awareness on the part of these organisations regarding opportunities to influence opnion, because it would certainly be in the interests of operators and Government to express their viewpoints in a research project such as this.

incumbent, Telkom. Partly triggered by the United States based National Telecommunications Cooperative Association (NTCA), in 2000, industry and Government discussed telecommunications in rural areas. The NTCA tried to convince the sector to use its successful model, which has been used before in the United States, Poland and Hungary, in South Africa. The NTCA model consisted of granting co-operative, community-based operators a licence accompanied by a subsidy, to enable them to provide telecommunications services in a demarcated area. Based on the then last available national census figures of 1996, in 2001 the Ministry of Communications identified 27 areas as being under-serviced, because their teledensity (the share of people with access to telephone services) was below 5%.

Late in the process, the large mobile telephone companies suggested a construction in which the community-based companies should become (Mobile) Virtual Network Operators ((M)VNOs), their motivation lying in the possibilities of using these companies to execute part of their community service obligations. However, the Department of Communications (DoC), under pressure to increase the entry of historically disadvantaged individuals and improve black economic empowerment (BEE) in the sector, decided to use a model loosely based on NTCA experiences, in which the companies had to roll out their own physical infrastructure.

The preparations for a regulatory framework began, resulting in the publication of a draft licence for the so-called under-serviced area licensees (USALs) in late 2002 (Gazette 24204). With the 2001 Telecommunications Amendment Act, a legal provision to enable the licensing of services in these areas came into force, by the insertion of section 40A in the Telecommunications Act. The under-serviced area licence should be awarded in a structured "beauty contest"; all operators complying with certain standards were able to send in a bid, which was then reviewed according to an elaborated framework developed by ICASA.

The USAL process was part of the economic and social development agenda of the South African Government; it has therefore restricted the possible applicants to Small, Medium and Micro Enterprises (SMMEs) with a strong local basis and a sufficient level of equity and jobs in the hands of black people. The licences would grant an operator several beneficiary rights. The USALs were allowed to choose their technology without restrictions. As Voice Over Internet Protocol (VoIP) would possibly have provided a major cost advantage, this was seen as an attractive incentive for operators. In effect, the USALs have been the first operators with a converged licence. However, with the upcoming Convergence Bill, which will be discussed later, that advantage will partly disappear.

The ownership and control licence conditions have been consciously included from the outset. As the USAL process aims to contribute to BEE, the licences state that a minimum of 30% of the shares should be in the hands of historically disadvantaged groups, and 56% of the management should consist of people from such groups. To prevent large companies from

taking control of the process and neglecting local characteristics, substantial cross-ownership (holding shares in more than one under-serviced area operator) was prohibited.

A policy, to be developed by the Universal Service Agency, would provide for a subsidy of 15 million Rand to each licensee over a period of three years, to be used for the roll-out of new infrastructure (Universal Service Agency, 2004, art. 2 and 5). Apart from the draft licence, ICASA expressed an intention to prescribe supplementary interconnection guidelines (Gazette 23771). These should enforce asymmetrical termination charges, which meant that USALs would collect more money from an incoming call into their area than they would have to spend to deliver a call on a network outside their area. The underlying rationale was that this would reflect the higher costs in rural areas and therefore would enable the operators to recover their expenses. These were withdrawn, however, apparently following questions raised by the national operators on their legality. It was stated, too, that no additional regulation was needed to enable asymmetrical interconnection arrangements to be set up; this was illustrated by the example of fixed to mobile interconnection tariffs. Moreover, critique arose around the special treatment of USALs; the proposed regulations had not been based on an analysis of cost structures, but on the mere determination of an operator as a USAL.

Identification and analysis of policy goals

The USALs have two main objectives. The first is to provide voice telephony and value-added services to areas that are not serviced or are under-serviced by the national operators, because they are remote, they have a low income per capita and the population density is low. This objective can best be described as a universal service or access objective.

The second objective is to provide SMMEs with the possibility of entering the telecommunications market and, in this process, to favour historically disadvantaged groups. The idea was to use the licence as a means to achieve broad-based BEE. Broad-based BEE is most clearly defined in the Draft ICT Charter on BEE (2005: 5):

"Broad-based Black Economic Empowerment" means the economic empowerment of all black people, including black women, workers, youth, people with disabilities and people living in rural areas through diverse but integrated socioeconomic strategies; that include, but are not limited to:

1. *increasing the number of black people that manage, own and control enterprises and productive assets;*
2. *facilitating ownership and management of enterprises and productive assets by communities, workers, cooperatives and other collective enterprises;*
3. *human resources and skills development;*
4. *achieving equitable representation in all occupational categories and levels in the workforce;*

5. *preferential procurement; and*
6. *investment in enterprises that are owned or managed by black people.*

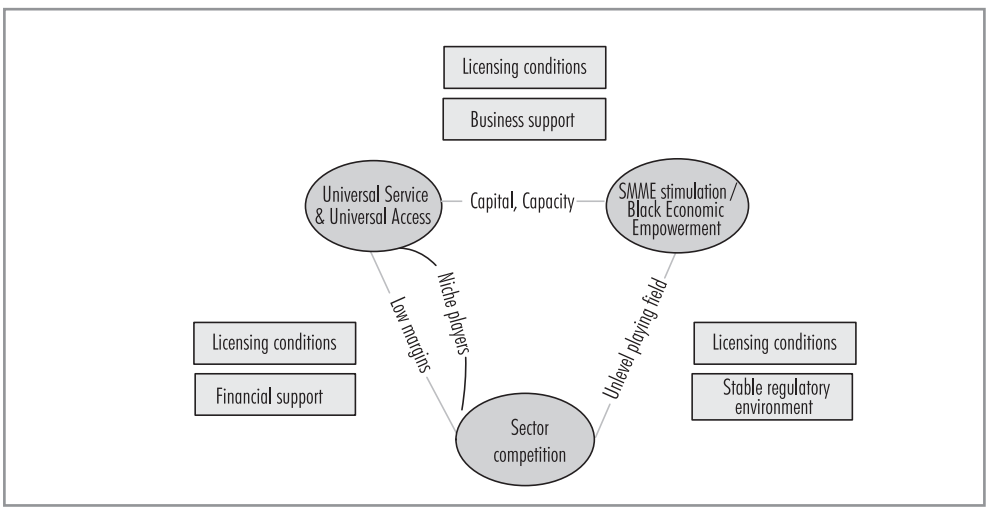
A bidder on a licence has to prove that historically disadvantaged groups and women have a significant share in both ownership and control. Next to that, a bidder has to show involvement with historically disadvantaged groups, by showing how it is planned to involve them in the business process and how skills will be transferred to the historically disadvantaged groups (Gazette 27166: 21-22).

In the 1996 White Paper on Telecommunications Policy (Gazette 16995), the policy objectives of the telecommunications sector as a whole were presented. In that document, it is stated that the policy in South Africa focuses on introducing and sustaining competition in the sector.

These three main objectives – universal service and access, SMME stimulation and BEE, and introducing and stimulating competition – are the driving forces behind the USAL concept and the changes in the regulatory environment over the last few years. Unfortunately, the combination of the three objectives also introduces conflicts between them. Figure 2.1 (below) provides an overview of the objectives and the conflicts between them.

The first conflict arises between the SMME/BEE objective and the stimulation of competition. In a highly competitive market, margins are low, and skills, capital and scale play a major role. Historically disadvantaged groups, by definition, lack skills and capital. Second to that is the scale of the operators. While the USALs are SMMEs with a small licence area, the competitors are often large corporations that operate throughout South Africa and beyond. This difference in scale can be both an advantage and a disadvantage to the USALs. It can be an advantage, as small companies often have more flexibility to adjust to the needs

Figure 2.1: Policy objectives and conflicts



of the customer, but also a disadvantage, as a small company will have less capital and human resources available. Another issue worth noting could be negotiations between the parties involved. Where the large operators for the most part have a significant legal department, the USALs usually have only a few employees, certainly in the start-up period. Many of the possible regulatory solutions to support the USALs in their struggle against the larger operators, which will be described later, can themselves be deemed anti-competitive.

A second conflict arises between sector competition and universal service/access objectives. In a competitive market, where the margins are low, providing services in a rural area – where the costs of delivery are high and the income *per capita* is low – is not attractive. It is more attractive to offer the service in a high-density area with high incomes. This is why in an unregulated market rural areas are often not served. Of course, competition also has many advantages; because the market is no longer dependent on one company for its services, the customers' needs will be better serviced. It is important to acknowledge that competition in rural areas is limited – after all, there is a reason for such areas being what is termed "under-serviced". In many respects there is no competition, but especially in the potentially profitable market segments like mobile telephony, competition does exist.

A third conflict is between universal service/access objectives and the empowerment objective. Introducing telecommunications services in low-density rural areas is expensive, and to make services in these areas profitable, much creativity and a willingness to innovate technologically are needed. The historically disadvantaged groups lack the capital and the skills to introduce these services.

As the identification of tensions clearly shows, the different conflicts are often expressed in a similar way, like the lack of skills and human capacity. For a clear analysis and an identification of possible solutions, however, it is necessary to locate the separate sources of the conflicts, instead of looking merely at the symptoms.

Ways to relieve conflicts

Several tensions were identified early in the process (Gillwald, 2002: 18) and several solutions were suggested. One of the main solutions to the unlevel playing field between the small companies and the larger telecommunication companies is the creation of competitive advantages in the licence (Smit, 2004: 29). Various examples can be found in cases around the world.

As mentioned above, one of the strategies often used in attempting to level the playing field and give the rural licensees some extra financial backing is asymmetrical termination tariffs, which means that the costs of a call terminating in the rural area will be higher than the costs of one originating in the area (Wellenius, 2002: 35). Later in this article, the question of whether additional regulation is needed to settle asymmetrical tariffs will be discussed.

A second possible strategy, also used in Chile, is to allow companies to operate in several areas, or at least co-operate with companies in other areas (quoted in Smit, 2004: 36). One way to co-operate between the companies is to establish a shared company – by means of which some of the required investments and skills can be shared.

To help the USALs in their negotiations on interconnection with the incumbent fixed-line operator and the three mobile operators, a possible solution is the introduction of a Reference Interconnect Offer (RIO). This means that an operator has to make a publicly available interconnection offer, which is sanctioned by the regulator. Any party that wishes to interconnect can use this reference offer or negotiate a better agreement with the offer as a base. Such an arrangement ensures that the USALs will not be victims of the strong legal departments of the larger operators.

The second conflict mentioned above is between the highly competitive environment and the universal service/universal access objectives. Providing services in rural areas is expensive, and in a partially competitive environment it can even be a source of losses. The South African Government acknowledges this and has provided Telkom with an exclusivity period, accompanied by conditions like investment obligations in rural areas. As stated earlier, many of the lines have later been abandoned, due partly to non-payment issues. The use of modern technologies can lower the price of offering services in these areas, but subsidy is still needed to support the initial investment. It is questionable whether the 15 million Rand subsidy from the Universal Service Fund (USF) is enough to make the business case viable. It might be necessary to provide more money or possibly even a continuous subsidy to prevent the provisioning of services from resulting in losses. However, a permanent dependency on subsidy could indicate a weak business case. Gillwald (2005) describes another weakness of the current policy, in that it only benefits those companies that have already met some performance targets after a certain period of time. This means that successful companies, who may not need funding as desperately, will be rewarded, but that no real certainty can be given at the start of the business process (and the funding cannot be counted on for leveraging private funding). Hence, the significance of the USF contribution may be minimal.

In Chile, the licensed rural operators had an exclusive licence to operate in those areas, although their operations were limited to pay phones. This assures the investing companies that no other companies will come in and cherry-pick in the commercially interesting areas, while not investing in less beneficial areas. Unfortunately, the South African USALs do not have such exclusivity, but have to compete directly with the large national operators on both mobile and fixed-line telecommunications. On top of this, the upcoming Convergence Bill (Minister of Communications, 2005) might give other companies the possibility of operating as voice telephony providers over other networks, without network rollout obligations, offering

them the opportunity to operate only in the most profitable areas. This breakdown of advantageous rights for USALs has started with the Liberalisation Ministerial Determinations issued by the Minister of Communications, opening the Value Added Network Service (VANS) market, as of February 2005 (Department of Communications, 2004).

As stated above, both capital and skills are problems arising directly from the SMME approach to the universal service/access objectives. Small companies, especially companies owned by historically disadvantaged groups, often have little access to capital. As telecommunications is a capital-intensive market, a clear funding model is needed, to provide licensees with capital or access to capital. This can be done by direct subsidisation, a low interest loan or a loan guarantee. The BEE objective of the licence has a direct effect on the skill level of the licensees. A co-operative model comparable to the South African one was used in Poland to introduce telecommunications in rural areas. The NTCA has identified the provision of training as one of the important success factors (NTCA, 2003: 13). Another possibility to enhance the skill level and lower the costs of operating is for operators to join forces – for example, by forming a Shared Platform Company (Smit, 2004: 35). By sharing facilities, the rural companies can lower costs and also share the necessary skills. In Chile, one company could run a business in several of the identified rural areas, thereby creating possible economies of scale and the possibility of sharing skills among areas.

Under the current regulations, licensees can get a total of fifteen million Rand spread over three years, if they meet the roll-out objectives. This subsidy is not likely to be enough to finance the hardware investment costs, so the USALs need to get money from the capital market, development banks and empowerment funds. Because the USALs are SMMEs, the business case is thin, and the future of the market is uncertain with the pending regulations, both banks and investment companies are reluctant to invest. The Government could support the USALs in getting money by either giving loan guarantees or subsidising a larger amount of money. However, the current framework can only be successful if there is a real business case to be made in the areas, otherwise operators and investors will not show interest, and the businesses will not be sustainable in the long term.

Changes in the regulatory environment

The first major change in the regulatory environment occurred in the interconnection guidelines. Successive Government Gazettes, in which updated versions of the intended supplementary guidelines for USALs were published, brought a worsening of the differential (the difference between termination tariffs for incoming and outgoing calls), seen from the under-serviced area operator's perspective. Finally, in July 2004, the supplementary guidelines, which had been developed for the sole purpose of enabling the rural operators to recover their costs, were completely withdrawn. It was announced that USALs should follow

the regular interconnection guidelines, which described the negotiation process that had to be followed. However, on the content of the interconnection agreements, regulations no longer guaranteed favourable advantage. Furthermore, in September 2004 the Minister of Communications announced the release of the prohibition on VoIP services, which meant that each VANS operator could use this technique, and the USALs would no longer be in a favourable position (Vecchiatto & Weidemann, 2004).

Another major development to the disadvantage of USALs was the fact that the process was being plagued by numerous delays. The first licences were only awarded in October 2004, whereas the manner and form for the submission of applications had been published as far back as December 2001 (Gazette 22959). The applications received in 2004 only covered the first round of licensing services in under-serviced areas. Of the 27 areas, 10 areas have been included in the first round, for which 15 applications have been received. Four of the applicants received their licences in October 2004; three further licences have been awarded to operators struggling with certain parts of their bids. It is very clear that the delays urged some, less strong, companies to give up: "Many consortia could not sustain themselves during this lengthy process and fell by the wayside, while others consolidated their bids and co-operated with each other" (Smit, 2004: 19).

Some new provisions are covered in the Convergence Bill, which may make the operations of small telecommunications operator a lot more complex. Operators are obliged to carry traffic to Government directory information services (Minister of Communications, 2005: art. 62.7), which are likely to be used frequently by rural people because of illiteracy and the lack of other communication means.

Roaming

Apart from all the changes that had a negative effect on the attractiveness and viability of the licensees, the final licences included a new, beneficiary provision, too, as it allowed for roaming. The licences state in article 4.3 (Gazette 26998):

> *(...) the Licensee may provide roaming services to the extent, and on such commercial terms and conditions, as may be agreed with one or more other licensees authorised to provide telecommunications services in the Licence Area. Such a roaming agreement may allow: Customers of the Licensee to use the network of another licensee; or customers of another licensee to use the Under Serviced Area Telecommunications Network; or customers of either licensee to use the network of the other licensee.*

The possibility for a USAL to roam on a network of one of the existing national cellular operators is considered as a *conditio sine qua non*. It allows the under-serviced area operators to start building up a customer base by reselling cellular products, while gradually rolling out their own (complementary) network. The licences, do not, however, provide clarity

on the legality of providing roaming services outside the licensed area; for instance, allowing customers to use their mobile phone with a subscription to one of the USAL's products in a non-under-serviced area such as Johannesburg. Section 40A, sub 3, of the Telecommunications Act states that:

An under-serviced area licensee shall provide any telecommunications services, including VoIP services, fixed-mobile services and public pay telephones, in respect of the area to which the licence applies.

It is difficult to get the right interpretation of "in respect of"; does it mean that roaming outside the area, offered to customers within the area is legal or not? More clarity seems to be needed to take away a large part of uncertainty at the USAL's side. Nevertheless, one should be aware that USALs do not only want roaming for customers of their own licence area, but would also like to provide cellular services to everybody in South Africa. Although, from a liberalised sector point of view, this should not be problematic, it may distract the USAL's attention from what is already a very difficult area of operation: the respective under-serviced areas assigned to them.

Apart from roaming, another regulatory development may be of great benefit to the USALs. ICASA is busy preparing regulations for number portability (Gazette 26834), which will ease switching barriers drastically, and which is thus important for new entrants like the USALs. Particularly in relatively dense areas, where competition with the existing cellular operators exists, number portability may be a necessary condition for any business case of a new entrant. However, the USALs will also have to provide the portability service, which is technically complex.

From a vertical to a horizontal market structure

Apart from the regulatory changes that directly affected the USALs – such as the end of the VoIP monopoly – a major change concerning the complete South African communication sector is about to be implemented. The Convergence Bill, as adopted by the National Assembly in November 2005, aims to provide an entirely new legislative framework for the communications sector. The main change is that licences will no longer be issued for vertical parts of the sector. Under the current legislation, a licence is required for the provisioning of a specific service, which is bounded to a certain technology. The Convergence Bill makes the shift from a vertical to a horizontal licensing structure, in which parts of the value chain – rather than complete service packages – will be licensed. The exact consequences for the USALs are not yet completely clear. However, the USALs have obtained a licence that is already converged; it allows the operators to choose their own technology, and to offer a wide range of telecommunications services. The Deputy Minister of Telecommunications, Radhakrishna L Padayachie, announced that the current USAL licences will be amended to fit within the new framework, but their core will remain intact. This is in line with article 85 of

the draft Convergence Bill, which makes provision for the conversion of existing licences (Minister of Communications, 2005).

Actually, it would seem that – rather than the regulations of the Convergence Bill as such – in fact the more significant implications for USALs will come from this shift to a horizontal market structure. This process has already been started with the opening up of the VANS market, as described earlier. It means that service providers can obtain a licence, and may be attractive partners for the USALs. To be successful, the under-serviced area operators have to balance infrastructure supply and demand, services supply and demand and human resources development. This is a very difficult task, and it seems highly likely that the possibility to co-operate with other organisations in the provisioning of services may enlighten this challenge. In general, it is recognised that services competition leads to more innovation and differentiation in the service package, therefore increasing the total demand for telecommunications service. The newly proposed horizontal market structure enables such service competition. Another effect may be that the opening up of the VANS market draws investors' interest away from USALs, as VANS are better able to cream-skim the telecommunications market in the short term, hence potentially providing a higher return on investment.

In the legislative process for the Convergence Bill, Government authorities asked repeatedly for a submission from the side of the USALs regarding the proposed legislation. Nevertheless, at the start of the parliamentary handling of the bill, no submission had been received. This should be a major concern, as it may be an indication that the current regulatory environment, and the rapid pace of change, may be too difficult for USALs to comprehend, and therefore may create too much uncertainty. While the USAL process is intended to empower small, community-based companies, it would seem to be comprehensible to expensive lawyers only! The South African regulatory environment does not seem to take into account the importance of regulatory stability. This is a concern that applies not only to USALs, but also to the investment attractiveness (and therefore the health) of the telecommunications sector more generally.

Coming up

USALs need not only a licence – which allows them to offer telecommunications services – but also (to the extent that they make use of wireless technology that needs spectrum from licensed bands) spectrum licences. Technologies like Global Standard for Mobile (GSM) and Wireless Local Loop[2] (WLL, such as WiMax) require such a licence. These licensing procedures and fees are separated from the USAL licences, as stated in article 7 of their licences.

2 Strictly speaking WLL is not a technology, but it is a term for an application, which can be offered by using technologies like WiMax, WiFi and CorDECT.

Earlier in this article, it was mentioned that the asymmetrical termination charges regulations were withdrawn during the USAL process. ICASA councillor, Mamadupi Mohlala, stated that this can be attributed to pressure from the industry, but that ICASA is intending to launch a proposal for asymmetrical interconnection tariffs again in the short term (USAL seminar, Polokwane, 03 June, 2005).[3] It is unclear whether ICASA will assign different number classes to USALs to make asymmetrical interconnection possible, although the proposed numbering plan seems to leave room for this (Gazette 26471).

New technologies lead to a changing market

In the last few years, the South African telecommunications sector has faced rapid changes. These have mainly been triggered by technological developments. As far back as 1999, the number of mobile subscribers had overtaken the number of fixed-line subscribers. From that point onwards, the cellular telephone subscription base kept on growing. In December 2004, an estimated 19 million people made use of the networks of Vodacom, MTN or Cell C (estimate from www.cellular.co.za). Compared to this, the fixed-line subscriber base is small, with fewer than 5 million lines (Telkom 2005: 52).[3] It should be kept in mind that both a fixed-line and a mobile device may provide access to more than one user, the latter device particularly in poor areas. The rapid spread of mobile telephone usage and the accompanying extension of mobile networks have changed the teledensity characteristics of the under-serviced areas dramatically. BMI-TechKnowledge estimates the average teledensity for nine rural areas it has investigated to be 10.5% in 2001, 19.2% in 2004 and 26.2% by 2007 (Smit, 2004: 3). The cellular networks are simultaneously a threat and an opportunity for USALs: a threat, in that cellular networks mean that a large number of people already have access to telephone services, which was not the case in 1996 when the teledensity measurements that formed the base of the under-serviced area policy took place. This effect will increase in the near future, when the major operators have to release millions of free SIM cards as part of the community service obligations in their cellular licences. Nonetheless, the large mobile penetration is an opportunity, too, in that people – even in rural areas – seem to have adopted mobile telephony, even while it is much more expensive than fixed lines. Besides, it is possible to offer mobile access at much higher efficiency rates than could be done with fixed lines (Research ICT Africa! 2004: 21).

As part of its community service obligations under the Public Switched Telephone Network (PSTN) licence, Telkom has brought a vast number of fixed lines to rural areas. Nevertheless, many of the subscriptions have been abandoned, because of non-payment. More than 75% (over two million lines) have been disconnected (Research ICT Africa! 2004: 20). Mobile telephony seems more attractive, but the reasons behind this distinction are as yet unclear. People from the industry suspect that the status of having a mobile device, the mobility feature

3 Organised by the Department of Communications.

and the possibility to dial emergency services anywhere, anytime, could be possible explanations for this.

Paradoxically, the disconnection of Telkom lines may offer an opportunity to USALs. It means that Telkom already has a large number of lines, including backbones, in some of the rural areas, with a large overcapacity due to the low use. Moreover, the price regime for Telkom does not allow the company to set up a different pricing structure in rural areas, whereas the USALs are allowed to do so. There may be an opportunity to offer fixed-line telephony at low cost. This is a general advantage for rural operators, based on their adaptability, small scale and proximity to the market (DBSA *et al,* 2002: 65-66). At least, they should be able to provide this service at a cost far lower than Telkom's. The prices of this provider have increased more than threefold in recent years, which leaves room for the assumption that its prices are much higher than the actual costs for providing the service. Another option that may be very interesting is the use of advanced WLL technology, which may be easy and cost-effective to deploy. However, there are three complicating factors. The first is that no industry standard has yet been evolved, so no benefits from economies of scale, interoperability and a large produce base could yet be drawn. The second consideration is that, due to the non-mobility of the handsets between different base stations, the demand for the service is yet unknown. It is likely that it will turn out to be a substitute for fixed-line services rather than for mobile services; the fixed voice telephony demand in these areas has shown to be at least unclear. Finally, the part of the WLL that has not yet been licensed (to Telkom) is yet to be issued, and it is not very clear which frequencies the USALs will obtain, and at which spectrum fees. However, ICASA might favour USALs in this process (Councillor Mohlala at the USAL seminar, Polokwane, 03 June 2005).

Operators' behaviour

Now that the first operators are becoming operational (on 03 June 2005, the first test call to a Thinta Thinta MVNO mobile subscriber was made), more insight can be gained into the business cases of the operators. The business models submitted during the licensing process seem to have little value in understanding the real operations of the licensees. Partly, this is because operators submitted models that best fit the ICASA evaluation framework, rather than necessarily reflecting the real intentions of the operators, but partly also for competitive reasons. According to some operators, the evaluation criteria could best be met with an application that puts emphasis on ideal goals, instead of running a profitable business. A second explanation for the difference between the initial and the actual business model is that technologies and markets have changed over time. Since the licensing process has experienced a great delay, many models have been overtaken by realities. A surprising fact, however, is that many operators *still* do not have a final business plan. Many of them are

awaiting the establishment of a standard for WLLs before they make a final choice on the technologies to be used. Obviously, the costs and possibilities of a technology also have impact on the services that can be offered and the target population that could be reached with the investment capital available. After all, it seems very unlikely that the operators will fulfil their licence obligations in the first year. Out of the seven licensees, six have included in their bids a roll-out obligation to be fulfilled in the first year after the issuing of the licence. Not meeting these obligations may lead to financial penalties and a non-awarding of the subsidy for the second and third years (Gazette 26998, 13), although mitigating circumstances like the regulatory uncertainty could be taken into account by the regulator (Gazette 26998, 32).

A confirmation of the expectation that the USALs will not start building their own networks in the first year, but will rather tend to piggyback on the infrastructure of the large mobile operators, is given by Shameel Joosub, Managing Director of Vodacom (Vodacom, 2005):

These [roaming] agreements will enable USALs to focus on building a customer base and a unique brand within the shortest possible timeframe, thereby creating positive cash flows, which can then fund the infrastructure roll-out as imposed by their licences.

According to the same spokesperson, Vodacom will not only offer a regional roaming service, but is also providing SIM cards, voicemail and emergency services and skills transfer. It has signed roaming agreements with at least five of the seven licensees (Vodacom, 2005), and at least one other licensee (Thinta Thinta Telecoms) has signed a deal with MTN (I-Net Bridge, 2005). It is very likely that the mobile partners will participate in the roll-out of the infrastructure of the licensees, as they have much more knowledge and experience than the USALs have, and already have a business relationship with them.

However, there also is an opposite movement towards more independence and self-sufficiency of the USALs. Sbonelo Mvuyana, Chief Operating Officer of Thinta Thinta Telecommunications and a member of the USAL Forum (an interest group), announced the establishment of a Shared Services Group. This company, commonly owned by some of the first seven and probably successive licensees, will provide services that are expensive or difficult to deploy, like voicemail. According to consultants who advised the under-serviced area operators, as a sense of urgency about the difficulty of the business case struck the USALs, their initial hesitance to co-operate diminished.

The dependence on external parties like Vodacom and the Shared Services Group illustrate that USALs themselves do not possess all the necessary capacity to operate a telecommunications business. This is generally considered as the most urgent problem of the USALs. While most operators have general business skills, they are entering a very complex sector; most of the operators are small firms with, therefore, limited resources in terms of money and human capital. There is hardly any assistance from the side of the Government,

so most operators rely on expensive lawyers and consultants to make the environment comprehensible. The Universal Service Agency and the Ministry are not unwilling to invest in capacity building (discussion with Chose Choeu, chairperson of the Universal Service Agency board, and Deputy Minister Padayachie), but the legally defined purposes of the Universal Service Fund only allow the money to be used in the acquisition and deployment of physical infrastructure.

On the financial side, operators indicate that it is still difficult to get enough investment capital from the private and semi-private sector. This is partly due to the prohibition on using the licence as a loan security (Gazette 26998: art.14.2).

Impact of sector structure and culture

An approach in which the environment of the USALs is evaluated is too narrow when the overall sector structure and culture have not been taken into account. Williamson describes four layers at which one could look at institutional economics (Williamson, 1998). In this case it does not suffice only to consider layers three and four; the institutional environment in layer two and issues like tradition, norms and customs in layer one also have a mayor impact on the current discussion. The market has already been described, but some regulatory issues affecting the USALs are a derivative of the general regulatory environment, which therefore merits examining.

Although the telecommunications sector regulator is meant to be independent, several major decisions have to be approved by the Minister of Communications before they come into force. This situation can theoretically have a negative impact on the objectivity and transparency of the regulator. The Minister not only has an interest in the performance of the sector as a whole, but is also acting as a shareholder of the major – and very profitable – telecommunications company, Telkom. Whatever happens between the regulator and the Ministry can only be guessed; but whether the Ministry uses a marginal test or is closely involved in regulatory decisions, the mere fact that a conflict of interest can be suspected has a negative impact on the confidence of market actors in the regulator. According to Melody (2002: 7):

It is by now a well-worn cliché that major investors and investment bankers in telecom infrastructure need answers to only two questions to determine whether a country has a favourable environment for investment. Is the regulator independent from the Government? Is the regulator independent from the incumbent operator? Until now, the answer to both these questions in South Africa has been "no".

Since 2002, there have been no indications that the situation has changed significantly.

Several key persons in the industry expect the Ministry to have more than a marginal influence over the process of approving regulatory decisions when it comes to the USALs. This is most visible in the case of the supplementary interconnection guidelines. ICASA

prepared these regulations to ensure that USALs could benefit from asymmetrical interconnection tariffs but, after a long process, the regulations were suddenly withdrawn. Even organisations that had submitted comments to the supplementary guidelines have never had an explanation for this change. It is highly unlikely that the regulator alone made the decision to abandon these interconnection guidelines. However, it should be noted that the industry comments on the guidelines were predictably negative, and so the official explanation that "the supplementary interconnection guidelines have been withdrawn because of industry comments" (Councillor Mohlala at the USAL seminar, Polokwane, 03 June 2005) is not surprising.

Another area where key persons involved in the USAL process expect the Ministry to have intervened is the publication of draft licences. There have been numerous delays, which may be attributed to understaffing of the regulator, the unfamiliarity of the USAL process and the inexperience of the applicants, but it cannot be excluded that the Ministry has also played a part in this. This does not mean there is evidence that the Ministry (the decision body) or the Department (the policy body) actually has influenced the outcomes; but again, the mere fact that the possibility exists raises suspicion within the industry.

A final example is the way in which the DoC has dealt with questions about the interpretation of the roaming clauses in its licences. Whereas ICASA should be the first (and ideally, the final) organisation responsible for questions regarding the interpretation of licences, the DoC took the opportunity to express its view at a seminar about a conducive environment for USALs (USAL seminar, Polokwane, 03 June 2005).

Another phenomenon, discussed earlier, is the regulatory instability of the South African telecommunications sector. Rapid changes in the regulatory environment will decrease the attractiveness of operating and investing in the sector. While changes could be necessary, at the very least it is important to communicate the expected consequences of new proposals (like the Convergence Bill) to the sector. It would seem that everybody in the industry and at the Governmental level is aware of the fact that the Bill has consequences for the USALs; but nobody seems able to predict the sum of the positive and negative changes.

A further remark about the regulatory structure concerns the integration of policy preparation and execution between the three bodies most closely involved in the USAL process: the DoC, the regulator (ICASA) and the Universal Service Agency. The lack of integration could be illustrated by the example of the preparatory route for the Invitation to Apply (ITA), published by the DoC. According to several Governmental employees, there had been no communication between the DoC and the Universal Service Agency before the ITA was launched. This is quite remarkable, when one considers that the subsidisation policy was in the hands of the Universal Service Agency, and constitutes a major incentive for operators to apply. The DoC maintains that,

after the ITA had been published, ICASA was responsible for its execution and the process of dealing with industry comments. While there are no clear objections against this role for ICASA, it would seem strange that ICASA itself did not prepare the ITA.

Finally, it should be understood that the operating budgets of ICASA and the Universal Service Agency are quite low and – especially in the case of the regulator – many changes, which require regulatory intervention, are taking place. The lack of appropriate resources may be an explanation for delays in the process. Another effect of these "organisations under pressure" is that, according to former employees, many people have left the organisations for a position in the industry.

Policy objectives revisited

The USAL process has been discussed on two levels: the "operational" level, regarding the USALs specifically; and the sector level. However, some of the problems visible on these levels have deeper origins. This can most clearly be shown with the use of the policy conflicts as expressed in Figure 2.1 (above). They are expressions of higher-level policy objectives, concerning South Africa as a whole. In Figure 2.2 (below), these objectives are identified in the area outside the ellipse. These higher-level objectives are sometimes in conflict with one another, which explains the conflict of objectives at the lower, USAL, level. Only the direct conflicts have been shown; conflicts that pass through an intermediate objective have been left out for purposes of clarity.

A remarkable objective depicted on the diagram is the Government finances in the short term. Due to the shareholding of the Government in Telkom, a very profitable company, a conflict of interest seems to be present at the level of policy making. This does not have to influence every single policy decision, but will certainly have its (invisible) consequences, and negatively affects investor confidence. Earlier, it was argued that this has a negative impact on sector performance, and therefore on economic development and the ways in which free trade objectives and obligations can be fulfilled.

A second major conflict arises around free trade and economic development objectives on the one hand, and the goal of redressing racial inequality and social development at the other hand. Due to South Africa's legacy, economic development as such does not yet mean that the wealth will be spread fairly amongst its inhabitants. Therefore, bridging the gap between different income groups is considered a stand-alone, high priority for the country. It should be recognised, though, that this objective could conflict with other objectives. Generally, it is not possible to optimise more than one objective at the same time – certainly not when they are conflicting to some extent. The country has to opt for a balance between them; and while nobody would argue for giving up one of the objectives, for the effectiveness of policy development it should be kept in mind that a trade-off has to be made.

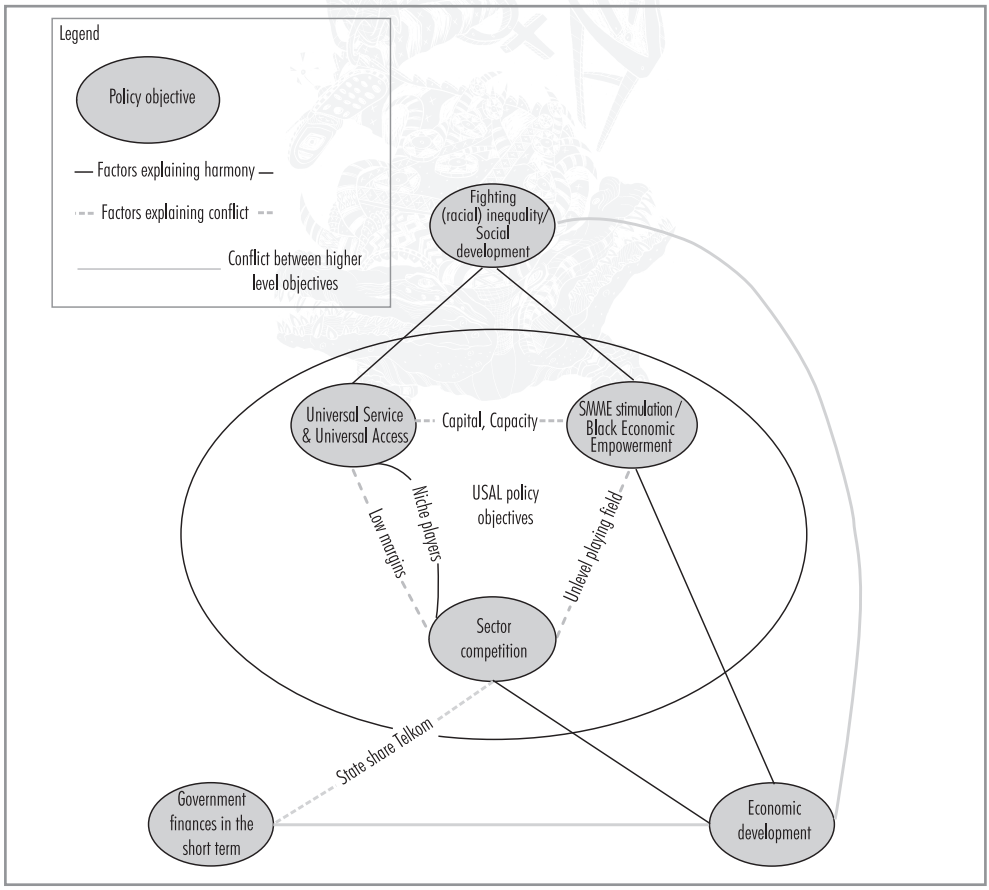


Figure 2.2: Higher-level policy objectives and the conflicts between them

Conclusions

Although it draws on international models, the South African model to expand the telecommunications networks to rural areas is particular. It is so for several reasons, but mostly due to the history of the country. This history, which caused large differences in wealth and education between different groups of the population, was the reason for the introduction of BEE objectives into the process, which coincides with the stimulation of SMMEs. The introduction of an additional goal to the universal service/universal access objectives has introduced several possible tensions, which need to be resolved for the process to be a success. A broader objective of the telecommunications regulation is the introduction and sustaining of competition in the market. In turn this introduces several further conflicts. The main conflicts between these three objectives are in the areas of access to capital and human capacity. Small companies, especially those consisting of people belonging to historically disadvantaged groups, have trouble finding capital and getting people with the right

knowledge and skills into their companies. Another conflict is the highly competitive environment under which the licensees will have to work. Due to the non-exclusivity of their licences and the upcoming Convergence Bill, other companies can compete directly with the licensees, but those other companies can cherry-pick – which means that they can choose to offer their service only in the most profitable areas.

The current licence model does not mitigate all these problems. In fact, the current regulatory framework is complicated, to such a degree that the licensees need expensive lawyers, or are outsourcing a significant part of their businesses, to be able to comprehend it fully. This leads to high transaction costs for the USALs, costs that may substitute direct investments in service delivery.

The viability of the licensees is hard to predict, as there are many factors influencing it. One of the main issues, which stands in the way of a final conclusion on the viability, is the constant change in the regulatory environment. Over the past years, the licence conditions have changed significantly, and with the upcoming Convergence Bill further changes can be expected. No one seems to know what the exact effect of the Bill will be on the USALs. Moreover, the unclear separation of duties between the DoC and ICASA makes it hard to predict future developments in the regulatory environment.

It is still too early to remark upon the business models of the operators. They have not yet started up their businesses, and recent business models are not publicly available. During the interviews, most of the interviewees stated that most of the licensees entered the bidding process without knowledge of the market and the regulations, but that they are catching up quickly. Nonetheless, it is still difficult for the licensees to get knowledgeable people and enough capital to sustain their businesses.

In the current market, some of the operators will survive, but others will not. Whether the companies' creativity and business sense will turn out to be a sufficient condition for a healthy business and attainment of universal service goals will only become apparent in the future.

Recommendations

During the research, many options to enhance the achievability of the policy objectives came up. Some of them came directly from the interviewees; others were a logical response to the issues under discussion. Most of these options were discussed in the interviews and only a few of them have broad support.

There are two urgent issues, which have to be resolved immediately, to prevent the first-round licensees from losing even more opportunities. The first issue is the most urgent, as it directly affects the business cases during the start-up period. The licence is not clear on the legality of roaming outside a USAL's licence area. The licence itself is a regional licence and it is aimed at providing telecommunications in deep rural areas, but the licensees need

national roaming, to be able to provide their customers with a competitive service. Some people are afraid that the USALs will become no different from national operators, but these fears seem unfounded, as the primary business models of the USALs are concentrated on their designated areas. ICASA has to clarify this issue as soon as possible and assure the USALs that they can offer their clients roaming throughout South Africa.

The second urgent issue involves the spectrum licences. Most USALs will use wireless technologies, for which they need frequencies in licensed bands. If these USALs are to survive, they must be given the opportunity to access these frequency licences at a reasonable rate. It is important for the USALs and their investors to have more clarity on this issue as soon as possible, as they need to make technology and investment choices.

Several Government organisations have said that new supplementary interconnection guidelines concerning asymmetrical interconnection are coming up. Instead of devising yet another proposal, the regulator should do a thorough market analysis and identify significant market powers (SMPs) and the possible abuse of such powers. If this market analysis shows abuse of market power, the regulator should be able to intervene. Arbitrary regulations, without the support of a market analysis, are not in the interests of the sector. A recent study on price regulation states (Peitz, 2005: 354):

Applying asymmetric instead of cost-based access price regulation and thus providing a temporary advantage for entrants, the regulator should be aware that this may attract even less efficient entrants.

This observation does not mean that asymmetric rates will not arise from interconnection negotiations, but the question is whether intervention is necessary to provide this. Another consideration concerning the establishment of new interconnection guidelines is the inequality that may be created between operators in the first and successive rounds; as the first operators are already in interconnection negotiations, they may finish suboptimal arrangements before the new regulations come into force. In each case, it is wise to keep the option for asymmetrical interconnection regulation open and, particularly in the numbering policy, provisions should be made for the asymmetrical interconnection option. Asymmetrical tariffs should be bound to certain distinctive number classes, so that a telephone user can easily distinguish between the different tariffs. This means that USALs should be assigned number blocks that are different from the geographic numbering scheme used by other fixed-line operators. Two options are possible: new geographic classes or the assigning of non-geographic number ranges to USALs.

If the proposed market analysis unveils significant market powers, there is another option to ensure that these powers are not abused in the negotiations with the USALs. A common regulation in many countries is to oblige all SMPs to prepare a Reference Interconnection

Offer, which is then ratified by the regulator. Such a requirement prevents the abuse of market power, as the base of negotiations is clear.

Capital and capacity

One of the most persistent issues raised by licensees is their access to capital. While skills and knowledge can be imparted or built through training, capital is only limitedly available. Close attention has to be paid to the USALs during their first years, to ensure that they have enough access to capital for their initial investments. If not, the USALs could run the risk of bankruptcy – not because of an unviable business case, but purely because they did not raise enough capital. In such instances, (limited) loan guarantees could help the licensees out.

One of the things that should have been learnt from the first round is that at the start of the process the bidders do not have a sound understanding of the regulatory environment, complexity of the telecommunications market and the technologies used. At the start of the process, then, more effort should be made to bring the knowledge of the bidders up to the necessary level and to prevent them from investing money in something they do not understand. It should be borne in mind that the aim of the policy is to empower historically disadvantaged people, and so supporting and protecting them needs to be part of the process, as their business failure would be a socially undesirable effect. It is very clear that a lack of capacity on the part of operators has been a major problem in the first round of licensing. Now that there is more experience with USALs, there should be an opportunity for the Universal Service Agency or commercial institutions to set up a training course for would-be applicants. In this way, knowledge could be transferred far more effectively and easily than by making use of expensive lawyers and consultants. Many people have suggested using the Universal Service Fund for such purposes, but that will take a long time, as a change in the law would be required. Apart from that, the costs of institutionalised training are not that high as to prevent operators from paying for themselves, but the Universal Service Agency could take on the role of ensuring that the possibilities exist. Although some major operators do provide assistance to USALs in terms of capacity building and skills transfer, it would be preferable to have a course offered independently.

Regulatory structure

What is remarkable about the South African regulatory environment is the distribution of work between the regulator and the Ministry. While, in most countries, the Ministry designs policy and the regulator enforces it, in South Africa the Ministry has to approve all regulations designed by ICASA. A wider distribution of responsibilities would have been better but, by granting additional powers to the Minister, the new Convergence Bill is entrenching the problem rather than improving things. On some issues – such as general matters of licensing conditions – more co-operation between different parties would be healthy.

Another important recommendation, expressed by many industry people, is a better integration between the Universal Service Agency and ICASA. While they perform different functions to a certain extent, they should have easy access to each other's information.

A final remark, about the sector as a whole but the USALs in particular, is the need for regulatory stability. Change may be inescapable, but at least the directions and consequences should be predictable. Communication can be a powerful method to address such issues.

Operators' behaviour

On the operators' side, there are only a few recommendations. One of the most important recommendations is for them to work together. The USAL Forum was a good initiative and the recently formed Shared Services Group is a second one. One issue on which the licensees have an obvious interest to co-operate is the regulatory environment. The upcoming Convergence Bill will almost certainly have a huge impact on the operations, but none of the USALs have taken the opportunity to comment on the bill. Co-operation among the USALs on issues of regulation would be helpful. As long as the USALs are realistic and have a creative business case, they will probably have a decent chance of surviving in the market.

Learning opportunity

The original idea was to use the first round as a test case, from which lessons could be learnt for the successive rounds. Due to the long licensing process, the second round of licensing has started before the first licensees have been able to start their businesses; and thus no conclusions can yet be drawn about the licence conditions. Much has been learnt about the licensing process itself, and the second round seems to be on track. It would certainly be advisable to evaluate the first round thoroughly before commencing the third.

Reflection

This research has focused on the first round of licensing, on which the analysis of threats and opportunities has been based. However, as successive licensing rounds commence, applicants have an advantage over the first licensees: there is more clarity on regulatory issues; one could have gained knowledge from the many public documents published in the first round; banks and existing (cellular) operators are more knowledgeable about under-serviced area business cases; it is likely that the regulator needs less time and therefore the "burning" of initial capital can be prevented; and some information about existing business cases has become available. This does not necessarily mean that future applicants will outperform the earlier licensees, but it does show that there is less uncertainty about their business case. Evidence that the interest from the private sector in the USALs has grown lies in the high number of applications in the second round: for 14 areas, 43 applications have been submitted.

A note of caution: as many people dealing with the USALs in the first round have left the regulator and the Universal Service Agency, it may be that these bodies partially have to "reinvent the wheel".

This article has accepted as a fact the existence of the current USAL framework. However, one could also investigate other possibilities for achieving the objectives of universal service and access. While it is unlikely that the policy will change radically – given that it has just started – further research on alternative constructions may find additional ways to relieve the policy conflicts.

One could think of approaches that have a stronger basis in the communities, with very small companies, supported by supported by non-governmental or Government organisations or larger operators. New technologies like WiFi, which are easy to deploy, may enable less complicated ways of operating in the telecommunications sector. Or one could rethink the complex processes for the USALs: do they not exclude real community-based initiatives from the very beginning? Maybe a deregulated environment, with much lower transaction costs, could turn out to be more successful than the whole institutional framework currently set up.

An alternative approach to regulating the sector might be derived from the concept of process management. If one acknowledges that Governmental and industry actors are dependent on one another, one could use these mutual relations to negotiate about the ways to regulate the sector. A process approach makes use of the knowledge available among all participants, uses the advantages of learning, allows for mistakes and is quite flexible in the issues that could be addressed. Particularly in a situation with limited Governmental resources on the one hand, and a complex and rapidly changing environment on the other hand, this seems to be an attractive option.

Another alternative to the current USAL framework is to change the focus from infrastructure- to service-based competition. The BMI-TechKnowledge Group (quoted in Smit, 2004: 25) states:

While there is a tendency for some USALs to roll out their own infrastructure, it may be duplicating existing infrastructure in the area. An alternative market structure - with a greater emphasis on services-based competition - would allow for multiple infrastructure providers to lease or share the present operators infrastructure and facilities.

The South African approach to rural telecommunications is different from many other countries, in that it is community-based but does not provide exclusivity. Countries that have yet to design a structure could take the opportunity to learn from the South African experience, but it would be wise to wait some time, until the first results become available. At this point, the operators are only at the very beginning of their operations. ❑

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