TELECOMMUNICATIONS AND REGIONAL DEVELOPMENT

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ABSTRACT: While modern telecommunications infrastructure and services have been recognised as important in stimulating regional economic development, significant disparities in their provision have been observed between metropolitan and regional areas. Some of the identified advantages of telecommunications services include the diversification of economic and social opportunities, improved efficiencies for regional businesses, and the potential for population growth. Recognising this, regional communities have been putting increasing pressure on governments to improve options for public and private provision of telecommunications services. Some regional communities have taken a more direct role in this process. This article includes a case study of an example in the Riverina Region of New South Wales where the Riverina Regional Development Board instituted a program with Telstra Country Wide to improve the region's telecommunications infrastructure.

1. INTRODUCTION

Telecommunications have become recognised by many local communities as an increasingly important part of their overall economic infrastructure, as important as traditional infrastructure such as roads and bridges. Some writers have gone as far as saying that it is an "essential" community need, alongside transportation and utilities such as water, gas and electricity (Williams, 1995 p. 67). It can be seen as one of the major elements of modern technology, which has been recognised as a major contributor to regional development (Bamberry, 2006).

This article describes how the Regional Development Board of the Riverina Region of south-western New South Wales sought to improve its telecommunications infrastructure to boost the region's economic development by entering into an agreement with Australia's major provider, Telstra. This arrangement, known as Riverina First, generated income for the Board's telecommunications infrastructure fund and community development fund, through which it aimed to stimulate the region's economic growth.

The article begins by reviewing the literature that discusses the disparities in access to high quality telecommunications for regional communities. It also reviews the debate on the roles of government, the private sector and local communities in the provision of telecommunications, its economic and social benefits, as well as the benefits it provides through diversification of economic opportunities and by supporting population growth. Attention is also drawn to

some of the potential disadvantages that need to be taken into consideration.

2. REGIONAL DISPARITIES IN ACCESS

Australia's history of disparities in access to telecommunications services between metropolitan/major urban and regional areas, particularly the more remote rural areas, was identified as an issue in the 2000 Besley Inquiry into telecommunications and the 2002 Eastens Regional Telecommunications Report (Beer, et al., 2003, p.207). Although considerable progress has been made in reducing cost differences between metropolitan and rural areas in the provision of mobile telephone and broadband services, significant disparities continue to exist.

In 2000, the House of Representatives Standing Committee on Primary Industries and Regional Services (2000, p.72, in Beer et al., 2003, p.206) commented that despite the licensing of additional phone carriers and around 700 Internet service providers since deregulation, it was concerned about the lack of investment in infrastructure outside the metropolitan areas. Similarly, the 2002 Eastens Regional Telecommunications Inquiry argued that despite some improvement, affordability in regional areas remained a major issue, and it recommended that the Government establish an incentive scheme for the provision of higher bandwidth services to regional and remote areas to ensure that all Australians could access services at prices comparable to those in metropolitan areas (Department of Communications, Information Technology and the Arts, 2002, p.228, in Pease et al 2003, p.5).

Bandias and Vermuri (2005, p.237), writing about northern Australia, argue that inadequate telecommunications infrastructure is a significant impediment to development in rural and remote areas of Australia. They see telecommunications infrastructure as the "lynch-pin" for achieving sustainable economic and social development, and that without this, "the disparities already experienced by rural and remote communities will be further exacerbated."

In the United States, Caves (2001, p.10) refers to a "digital divide" in access to information technology that separates the information "haves and have nots," and which is now one of America's leading economic and civil rights issues. Grubesic (2003, p. 263), describing developments in the state of Ohio, observes that most of the investment in telecommunications infrastructure occurs in urban areas of the state, with very limited access to broadband services in the rural areas.   He concludes that with the consolidation and privatisation of telecommunications provision, there is an increasing need for the formulation of policy to ensure that advanced telecommunications are made available to rural areas (2003, p. 287).

While disparities in access to modern telecommunications are evident in developed countries, they are particularly pronounced in developing countries, which have traditionally been slow to develop telecommunications infrastructure due to the higher costs of their deployment in rural areas. Keating (2001, p.1) comments that the lack of access to modern telecommunications "is one of the great disparities of the twenty-first century." The World Bank has recognised this, and provides financial support to governments, as evaluations of various

projects have shown that there is a link between telecommunications rollout and eliminating or reducing poverty (Courtright, 2004). It has been suggested that further research needs to be undertaken to determine the links between rural telecommunications and development, taking into account broad development indicators such as reduced socioeconomic inequality (Courtright, 2004, p.353). Some commentators suggest that "rather than trying to close the digital divide through top-down IT infrastructure projects, governments in the developing world should open their telecoms markets to the private sector" (Economist, 2005).

However, this argument is generally not supported by writers commenting on access to advanced telecommunications in regional areas of the more developed countries, where it has been observed that the private sector and corporatised public agencies have generally been reluctant to expand telecommunications services to rural areas. Wohlbruck and Levy (2001, p. 36) observe that the number of people using the Internet in rural areas of the US tends to be lower than in urban areas "because of lower incomes, lower levels of education, lower quality of infrastructure, and higher costs of service." Kolzow and Pinero (2001, p. 93) argue that the inability to demonstrate a favourable rate of return has hampered investment in rural telecommunications. They also point out that even where capital investments have been made in rural areas, there will be problems in updating this technology, as it will be difficult economically to write them off in the short term. Malecki (2003, p.111) argues that because of the lower level of demand, rural areas are "less likely to see the complete set of telecommunications innovations," particularly high-speed broadband, needed for the transmission of more complex forms of data.

Gibson (2003, pp.254-255), in his study of the "digital divide" in New South Wales, based on the 2001 Census data, found that although rates of computer usage and Internet access has been steadily increasing in both urban and rural locations, there has been no lessening of the gap between the two. However, analysis of the Census data shows that the situation is more complex than a simple distinction between urban and rural locations. There are high rates of use in some regional locations, and some comparatively low rates of use in parts of the metropolitan area. He found that in general, there are higher rates of usage in regional urban centres such as university towns, and in coastal towns with a small, but significant, number of wealthy residents. He concludes that "in short, there is a class, as well as a spatial dimension, to computer and Internet usage."

Research carried out by Hellwig and Lloyd (2000, in Beer et al., 2003, 207) found that the main factors influencing the use of the Internet were household income, educational qualifications, age, the presence of children older than ten, region and gender. They found regional location to be only a minor influence. The National Telecommunications and Information Administration (NTIA) made a similar observation about low-income and minority groups in the United States (Beatty, 2001, p.1).

Writing about the situation in Europe, Parayil (2005, p. 41) argues that while the digital divide is "the most cited woe of uneven development," it is not the accessibility issue it is made out to be, but is more an issue of equity. He

contrasts communities whose economies are based on "knowledge-driven industries" with traditional industries such as primary production, processing and manufacturing. He argues that the advantage of the new economy is that it benefits from increasing returns and network effects, while much of the old economy is characterised by constant or diminishing returns. The issue of increasing returns to scale will be discussed in more detail in a later section.

3. PUBLIC AND PRIVATE SECTOR PROVISION

By 2002, Australia had become a world leader, ranked third after the US and Sweden, in the development of telecommunications infrastructure for the use of the Internet, computers, mobile phones and broadband, facilitating the rapid uptake of e-commerce (National Office for the Information Economy 2002, in Pease et al., 2003, p.3). In 2003, the Australian Government implemented initiatives such as the National Communications Fund ($50m) and Networking the Nation ($464m) to improve both urban and regional ICT infrastructure. At the same time, Telstra Country Wide recognised the need to improve ICT infrastructure in various regional areas of Australia, acknowledging that factors such as access and awareness in these areas needed to be addressed (Pease et al 2003, p.4).

However, while other OECD countries were rapidly expanding the development of high-speed broadband, Australia was slow to invest in such developments, ranking eighteenth in 30 OECD countries (OECD 2002, in Pease et al., 2003, p.4). Incremental improvements were made, including extension of broadband to some regional areas, but the major expenditures required to develop state-of-the-art systems, such as high-speed broadband, were not made (Pease et al., 2003, p.4).

The former coalition government's ideological commitment to the privatisation of Telstra, previously Australia's national telecommunications provider, resulted in the use of some of the proceeds of the privatisation of Telstra to establish the Networking the Nation Program to provide funding to regional areas for small scale telecommunications infrastructure and services projects, including the establishment of local Internet service providers. It also sought to help make the full privatisation of Telstra acceptable to regional constituents by introducing the National Heritage Trust Program, where a portion of the proceeds from the sale of Telstra was used to fund community-based environmental projects, mainly in regional areas. Beer et al (2003, 197) argue that "the NHT represented a neat political solution to dealing with the problems arising out of economic restructuring, as non-metropolitan users have been staunch opponents of Telstra's privatisation." They also argue that the alternative would have been for the government to require Telstra and other large providers to meet a higher level of service provision.

The concept of universal service obligations was introduced to ensure a minimum level of service provision by public and private sector providers in regional areas, but the policy was framed to limit the financial impact on the providers. Although helping to limit the telecommunications disparities between regional and metropolitan areas, this approach may entrench the divide by

implying that it is not economically feasible to provide the same level of services in regional areas.

Beer et al. (2003, 208) point out that the primary objective of the private sector is to generate returns for shareholders, and that community needs and national interests are only secondary considerations. They argue that government intervention is needed to reduce the disparity in service provision. While the establishment of the National Heritage Trust by the Coalition Government may have made the full privatisation of Telstra more acceptable, the failure to spend most of the proceeds of the sale on telecommunications infrastructure limited any reduction in the 'digital divide' between regional and metropolitan areas (Beer et al., 2003,197).

Since gaining office in December 2007, the Labor Government has made a commitment to invest up to $43 billion in a National Broadband Network which it argues will provide high-speed broadband services to 98 per cent of the population. The proposal includes reference to equitable access for remote areas, including financial support to provide infrastructure in areas that are difficult and costly to serve. At the meeting of the Online and Communications Council held in Canberra on 21May 2008, representatives of Commonwealth, state and local governments agreed to "streamline" planning to develop a national broadband network that will expand the availability of broadband to new locations, and will improve the delivery of broadband applications and services, including giving priority to the key areas of health, education and services to indigenous communities (Minister for Broadband, Communications, and the Digital Economy, 2008).

Grimes (2003, p.175), writing about the European Union, argues that although the less-developed regions of Europe have always tended to lag behind in terms of telecommunications infrastructure, the differences have been reduced to some degree by policies of cross-subsidisation requiring national public sector providers to meet universal service obligations. However, in recent years, with the opening up of telecommunications to private sector companies under policies of allowing market forces to operate in an unfettered way, there have been increased risks that the more remote regions will fall further behind in access to high-cost telecommunications infrastructure, and that in other regions, the cost of broadband will be beyond the reach of many (Grimes, 2003, 175).

In a study of how Spanish regions have sought to implement policies of economic growth through the promotion of telecommunications, Jordana et al. (2005, p. 346) found that while some regions use a strategy of creating new public agencies, others make use of existing public and private sector organisations, modifying their operations to help achieve new objectives. While focusing on small business development rather than on the promotion of telecommunications, a study in the United Kingdom, suggests that it is more effective for local communities to develop their own initiatives and institutional capacity to solve economic problems (Atherton and Hannon 2006, p. 49).

In the United States, subsidies have been paid to some providers to help small isolated communities gain better access to telecommunications, but as Dawson (2000, p.135) argues, the program needs reforming to make it work more

effectively. It has been observed that smaller cities and low income areas with less demand for telecommunications are being left behind because private providers do not want to outlay the large capital costs of providing infrastructure (McMahon and Cohill, 2003, p. 9). It has been suggested that the more remote rural areas may have to wait for the development of wireless telecommunications because of the high costs of setting up wireline systems, and that eventually this will become the main approach used for most remote and low-density markets (Wohlbruck and Levy, 2001, p. 37). In Australia, the previous Coalition Government was moving in this direction, but this has been changed with the proposals of the new Labor Government described earlier in this section.

Some US writers suggest that smaller communities being left behind in the digital divide need to be proactive, and make modest capital investments to attract private enterprise to make further investment (McMahon and Cohill, 2003, p. 9). They argue that community planners can promote this by integrating telecommunications into planning when they routinely address such issues as revising zoning codes, preparing development plans for the community, collaborating with other local governments, and formulating policy in general. They suggest that for local government, this can be as specific as dealing with issues such as land use, rights-of-way management and zoning, as these may be important for a telecommunications master plan (McMahon and Cohill, 2003, p. 8).

Caves (2001, pp 9-10 believes that in some communities, officials, community organizations, and businesses are not fully aware of the level of their telecommunications infrastructure, including its capabilities and limitations. He argues that such communities need to assess their current infrastructure to implement improvements that will stimulate economic development. Richardson et al. (1995, pp 55-58) argue that there is a need for local leadership and long-term capacity building as necessary preconditions for rural economic development.

A case from LaGrange Georgia illustrates how the local government authority dealt with the problem of the primary carrier's reluctance to assist with upgrading the area's fibre optics telecommunications infrastructure. It took on local ownership and investment in its communications operation through a leasing arrangement with a start-up consortium (Read and Youtie, 1995, pp. 4-5). Because rural markets are not key targets for traditional telecommunications companies in the US, it has been suggested that rural areas need to seek telecommunications investment from 'non-traditional sources' such as new regional telecommunications providers, private locally owned telephone companies, and cooperative telephone companies (Beatty, 2001, p. 2). Tristani (1999, p38) argued some years ago in the following comment that local leaders need to become involved in seeking solutions.

> *While broadband deployment is occurring in some small cities and rural areas, I am concerned that it may not be happening as quickly or ubiquitously as it should. No single top down solution is going to work in all rural locations. The solutions need to emerge from local communities themselves, with supporting help from state and federal governments.*

In Australia, while local and regional institutions have often acted as pressure groups seeking federal government policy changes to reduce the cost of, and improve access to telecommunications, on the whole, most do not appear to have taken an active role in improving infrastructure and access. A comprehensive study of regional organisations undertaken by Beer (2006) identified a wide range of development activities undertaken by regional agencies such as regional development boards and business enterprise centres, as well as local government authorities, but these activities did not include telecommunications development. An exception to this is a number of initiatives that emerged in the Hervey Bay Region of Queensland involving a combination of groups. Institutional arrangements were developed, including Bay Connect, the Fraser Innovation Zone (FIZ) and the Fraser Area Centre for Technology and Open Resource Education Enterprise (Pease, Rowe and Wright, 2003).

The membership of these organisations comprised various combinations of representatives of the Queensland Department of State Development, the Hervey Bay City Council, the University of Southern Queensland, the Wide Bay Institute of TAFE, local businesses and community groups. Funding was obtained from a range of sources including the Networking the Nation Program, the Queensland State Government, Telstra Country Wide, and local government, to implement activities involving fostering awareness of new developments in information and communication technology, together with providing information, advice and training on its use in business and community activities (Pease, Rowe and Wright, 2003).

Another example reported in the literature is the development of a government-funded Internet portal to support the development of a wine-industry cluster in the Gippsland region of Victoria. Sellitto and Burgess (2005) found that the new telecommunications infrastructure resulted in a range of advantages associated with the development of industry clusters. These included improved relationships among the wine producers in the region, greater trust amongst members of the group, increased exchange of knowledge, and wider exposure to "innovative practices that resulted in new product development." Other advantages identified included the development of shared infrastructure, savings in transaction costs and directory services, the formation of new partnership arrangements, as well as improvements in the formulation and implementation of business strategies. The case study of Riverina First described in a later section of this article is a further example of a regional organisation seeking to become involved in telecommunications development in a more direct way. However, before reporting on the case, some of the key benefits of the development of regional communications described in the literature are reviewed.

4. ECONOMIC BENEFITS

The benefits of access to modern telecommunications systems for regional development accrue at both the level of individual business enterprises and at the broader community level. The two areas are not entirely separate, as benefits accruing to the community also assist business, providing the 'amenity' that makes a location attractive to new enterprises, and which helps to retain existing

businesses. This will be discussed in more detail in a later section. At the individual enterprise level, access to advanced and affordable telecommunications provides economic benefits in the following ways.

•   It can make regional companies more accessible – anyone in the world can find them, learn about them and access their services (Williams, 1995, p. 66)

•   It provides businesses with timely, cost-effective access to essential government information such as financing programs, export assistance advice and programs, as well as government procurement opportunities (Williams, 1995, p. 66)

•   It provides access for rural enterprises to markets for both inputs and outputs, as well as providing access to information on "technical" matters. Kanungo (2004, p.419) comments on this occurring in India, where information available on the Web is said to have increased farmers' awareness of ecologically sound techniques in agriculture and animal husbandry, leading to enhanced production, income, and livelihood opportunities. Also in India, Rao (2003, p. 26) reports on the development of "village level kiosks" which provide telephone and Internet services, and which were looking into providing access to information on "agriculture, weather, fertilisers and pesticides, education, jobs, government schemes and health."

•   A report in the Economist (2005) suggests that mobile phones raise long-term growth rates, that their impact is twice as big in developing nations as in developed ones, an extra ten phones per 100 people in a typical developing country increasing GDP growth by 0.6 percent.

Telecommunications can also support regional development through the economic efficiencies and economies of scale they generate. A major disadvantage of many regional enterprises is that they are unable to achieve economic efficiencies because of locational disadvantages, or they are not competitive because of the small scale of their operations. Examples of where telecommunications can reduce costs for regional firms include areas such as printing and publication, by offering products and services online (Williams, 1995, p. 67). In a study of twenty rural communities in Nebraska, North and South Dakota, Kansas, Iowa and Minnesota, Allen et al (1998, p.59) found that a majority of business owners/managers (61 percent) believed that telecommunications had increased their productivity, while 47 percent claimed that it had helped them expand their markets.

Regionally-based business-to-business firms can use telecommunications to reduce costs by making it easier for customers to find the cheapest supplier, by cutting the cost of processing transactions, by allowing better supply-chain management, and by making possible tighter inventory control, so that firms can reduce their stocks or even eliminate them. The result of these reduced costs is lower prices for consumers and improved competitive advantage for regional firms (Kolzow and Pinero, 2001, p. 86).

The economies of scale achieved by regional firms taking advantage of ICT enables them to increase sales, allowing them to reduce the cost per unit of output, and helping them become more competitive in the wider marketplace. This enables them to expand operations from local markets to national and

international ones. Parayil (2005, p. 47) argues that it is the "self-reinforcing capacity of a society to produce, re-produce, disseminate, and share knowledge as a public good" that allows more advanced economies to "generate and export knowledge-based products and services." The potential of commerce-oriented websites as important and efficient national and international marketing vehicles, for both businesses and communities, has now been obvious for some time (Williams 1995, p. 68).

5. SOCIAL BENEFITS

At the broader community level, access to modern telecommunications is reported as encouraging information sharing and networking across communities; for example, sharing expertise for solving common community problems, and for developing synergistic, collaborative ways of working (Williams, 1995, p. 66). Gripenberg et al. (2004, pp 12-13) describe four case studies in Europe where the public sector was involved in promoting local development by helping to establish community networks in relatively small centres. While not underestimating the difficulties involved for all parties in the process, including achieving a balance between top-down intervention and bottom-up participation, developing an awareness of participants' roles, the time taken in negotiation between participants, dealing with the differences in the expectations of those involved, confronting problems of financial resources and time, and achieving and maintaining a critical mass of participants, the researchers report that the projects resulted in "real collaboration between enterprises that previously did not communicate at all."

Other writers have drawn attention to improved regional telecommunications providing the means for co-ordinating community information systems for organisations such as local government, community groups, and non-profit organisations (McMahon and Cohill 2003, p.8-9). In a rural community in India, it had positive impacts in terms of improved access to information, improved access to health services, increased exposure of rural youth and school students to computer-based networking, and increased awareness among youth of the use of multimedia and databases (Kanungo 2004, p.419). Williams (1995, p. 68) observes that telecommunications can help reduce the disparities in educational opportunity between metropolitan and regional schools, providing a "tool for research and communication among collaborating students beyond the local community." It can also provide opportunities for the delivery of education and training in curriculum areas not available locally, and at a range of levels, including university level (Kolzow and Pinero, 2001, p.97).

6. DIVERSIFICATION OF ECONOMIC OPPORTUNITIES

Many regional economies are highly dependent on single industry sectors such as agriculture or the processing of agricultural produce, mining, tourism or a particular field of manufacturing. While such activities can successfully provide economic benefits to a community over a long period, the dangers of such dependence become apparent when there is an economic downturn in that

particular industry, or a major plant closure in a particular location. Pools of specialised labour that have provided comparative advantage for the region in the past become pools of unemployed labour facing major re-training or relocation problems (Porter 1996). This is often the result of the general immobility of labour, exacerbated by problems of selling real estate in an economically-depressed area, and having to purchase a home in a more expensive, growing location. In Australia, examples of this occurred in the downturn of steelmaking in Newcastle, Wollongong and Whyalla (Beer et al 2003, 110), while in Canada, the decline of nickel processing in the Sudbury region is cited as an example (Mount and Mulc, 2007, 338).

A significant contribution that improved telecommunications can make is to prevent some of the above problems occurring, or lessening their impact when they do occur. Read and Youtie (1995) argue that information-intensive industries provide an alternative economic base to the traditional resource-based industries found in some rural areas, which are increasingly subject to outside pressures and downturns. Where the appropriate telecommunications infrastructure is available, metropolitan or city-based firms can establish "back-offices" in smaller communities for routine computerised work. In the same way, such centres can provide a suitable base for call centres and similar business operations (Williams, 1995, p. 67).

Another opportunity for diversification as a result of improved telecommunications is the ability of regional transport operators to expand into the broader field of logistics, taking advantage of lower costs of warehousing bulky goods in regional centres prior to their distribution to major metropolitan centres (Kolzow and Pinero, 2001, p.86). Telecommunications also create potential for "native talent" to develop within rural and regional areas, as collaboration and learning is possible through ICT, especially with information-based industries (Williams, 1995, p. 68).

However, employment opportunities are not limited to relatively low-paid jobs, or to ICT-specific occupations, as telecommunications can also promote employment growth in professional and managerial positions in regional areas (Cook and Beck 1991, p. 285). The availability of telecommunications infrastructure in regional areas offers opportunities for people to develop businesses where they can work from home. This can include a wide range of occupations such as those in the fields of architecture, engineering, arts and crafts (Smailes 2002, p. 90). However, as McMahon and Cohill (2003, p. 7) point out, affordable broadband Internet access is essential for this to occur.

Wohlbruck and Levy (2001, p. 35), writing in 2001, reported on a study by the Economic Strategy Institute which predicted that a dramatic shift to broadband networks could add an additional $616-$721 billion to the US Gross Domestic Product by 2005 and 4.4 to 5.1 million jobs, and that it could lead to technology-led economic development for many regions. Although these predictions may have been somewhat optimistic, there is no doubt that the shift has contributed to the diversification of opportunities in many regional areas of the United States.

7. POPULATION GROWTH BENEFITS

Good telecommunications can contribute to regional development by helping to reduce out-migration and to attract new residents to regional areas. Over time, people may perceive being located in a regional area as less of a barrier to their careers and business development, and therefore may be more likely to move to, or stay in, regional areas (Williams, 1995, p. 68). Also, business location and re-location decisions may increasingly become influenced by the availability and affordability of bandwidth, particularly where these factors are important to the successful operation of a business. Quality of life issues, combined with access to fast broadband, are becoming driving forces in business relocation decisions.

As McMahon and Cohill (2003, p. 6) argue, "communities with adequate, affordable bandwidth can more easily attract companies that want to relocate in order to offer their employees a better quality of life (and lower cost of living)." The key point is that the availability of such facilities can provide a degree of locational flexibility of jobs that would not otherwise be possible (Cook and Beck 1991, p. 285). As Kolzow and Pinero (2001, p. 97) point out, people who are dissatisfied with living in urban areas are more likely to relocate to regional areas if they have good access to telecommunications, as they are able to maintain their occupations and contacts after the move.

Smailes (2002, p.90), reporting on in-migration to the Yorke Peninsula of South Australia (2-3 hours from Adelaide), comments on the significance of "location-independent electronic information" for such areas. He argues that while population developments depend on the availability of the right infrastructure, there are possibilities that the Internet will open up "opportunities for the creation of 'virtual communities' whose primary means of interaction is the Net, more or less independent of space." He comments that although these developments may result in some "rural dilution," they are also likely to add an "extra dimension" to rural life in regional communities.

Research has shown that good telecommunications in regional areas may help to create additional jobs. In the study of twenty rural communities in the central west of the United States reported above, Allen et al. (1998. p.59) found that the respondents to their survey had not reduced the amount of labour they employed as a result of improved telecommunications. The researchers concluded that developments in telecommunications in the region had expanded economic activity, and had increased "the volume and quality of employment opportunities" in the region.

8. POTENTIAL DISADVANTAGES FOR REGIONS

While the factors described in the preceding sections highlight the contribution that advanced telecommunications make to regional development, there are some potential disadvantages. As Castleman, et al (2000, p.4) point out, the impact "is much more difficult and complex to predict than this strategy seems to suggest." They outline some of the unintended consequences that can arise. These include the possible loss of "geographic niche advantages enjoyed by local businesses." An example of this is the competition faced by local video

stores from Telstra Bigpond movies, which can be selected from a wide, well-documented range on the Internet, and delivered in return-paid packages to the customer's mail box.

Such competitors, with larger markets, can achieve economies of scale, and often provide goods and services at lower prices than smaller regional firms. Consequently, many local and regional firms will need to use modern telecommunications, particularly the Internet, to expand their horizons and widen their markets to remain competitive and viable. Regional firms will need to identify and make use of their particular competitive advantages (e.g. cheaper and more spacious accommodation and storage) in order to survive and grow in this changed business environment.

9. CASE STUDY

The following case study describes how one Australian region, the Riverina Region of south-western New South Wales, sought to overcome some of the disadvantages it faced in terms of inadequate telecommunications infrastructure. In the wake of the previous government's clear agenda to privatise Telstra, many believed that it would be impossible to extract from Telstra any sort of 'tailored' solution to meet regional telecommunication infrastructure needs of a particular region. However, in 2003, the Riverina Regional Development Board managed to establish, in partnership with Telstra Country Wide, a new regional telecommunications system known as the Riverina Foundation for Innovative Regional Services and Telecommunications (Riverina First). Before describing this arrangement and how it was established, some background is provided on the Riverina Regional Development Board and the Riverina Region.

The Riverina Regional Development Board was one of thirteen regional development boards appointed by the Minister for State and Regional Development to provide advice to the New South Wales Government on regional development issues. It was funded through a contractual arrangement with the State Government to undertake a range of projects , supporting the development of regional businesses. The Board was disbanded in 2009 to make way for new regional development organisations jointly sponsored by the Commonwealth and State Governments called "Regional Development Australia."

The Board's area of jurisdiction stretched from Tumut and Tumbarumba in the east, west to Hay and Hillston, north to West Wyalong, and south to Lockhart. Overall, the Region comprised an area of over 76, 000 square kilometres, with a population of around 160,000, the main urban centres being Wagga Wagga and Griffith.

A key objective of the Board was to undertake projects that would foster the development of businesses to help generate long term employment and provide enriched lifestyles in environmentally sustainable communities. The Board sought to do this within the framework of its Riverina Economic Development Strategy, reviewed at five-year intervals, the most recent being for 2004-2010. It identified telecommunications as one of nine interdependent strategies for the region's economic development (Riverina Regional Development Board, 2003c).

The Board decided to develop a telecommunications strategy as it recognised

that telecommunications would foster economic development by reducing business costs, by removing barriers to market development, and by improving the general performance of local enterprises. It was believed that this would help to attract new businesses, and would help improve the region's competitiveness. In addition, it was felt that more cost-effective telecommunications services would create opportunities for regional businesses to take advantage of new computer-based applications to improve service levels, and to gain access to new markets (Riverina Regional Development Board, 2003c).

The Board and its local government partners also recognised that telecommunications was an integral part of regional development through its contribution to improved communications, information dissemination, and a range of newly-emerging services. The Board set as its objective, the establishment of a sound, region-wide platform for sustainable long-term community benefit through the appropriate and effective use of telecommunications. (Riverina Regional Development Board, 2002)

In its initial stages, Riverina First was supported by 19 local government councils, all of which signed a Memorandum of Understanding with the Board, except for one council which was unable to sign because of prior contractual commitments, but which gave the Board support in principle. In 2005, two councils in the neighbouring Murray Region, Greater Hume and Corowa Shire Councils joined the program. Riverina First activity was overseen by a regionally representative advisory board of ten people, and the project implementation was managed by a Telecommunications Development Manager. The advisory board met for the first time in March 2003 (Riverina Regional Development Board, 2003a).

The project progressed through three identifiable stages, with funding support under the Australian Government's Networking the Nation Program (NNP), together with funding from the New South Wales Department of State and Regional Development. The first stage was the development of a telecommunications strategy for the Riverina, commenced in 1997, and one of the first regional projects to access NNP funding. The strategy was completed in 1999.

The second stage included the appointment of a Telecommunications Co-ordinator to advance the telecommunications strategy. The role of the Co-ordinator was to help communities across the Riverina develop proposals for new services, and to coordinate awareness-raising and training activities aimed at increasing the use of online services. During this stage, the Board developed a product called Simplenet, a beginner's guide to the Internet. This was used in conjunction with training and awareness-raising activities delivered across the region from a mobile van equipped with computers, and connected to the Internet courtesy of Telstra. This stage of the project earned the Board a National Award in 2001 from the Australia and New Zealand Regional Science Association International for achievement in regional development best practice (Riverina Regional Development Board 2002).

Stage 3, undertaken in 2002, involved a demand aggregation study aimed at understanding telecommunications needs and usage in the Riverina, identifying

existing telecommunications infrastructure in the region, and developing a business case for improved telecommunications to enhance business development and attract investment. This stage included market research of 200 SMEs and over 1000 residential households. The market research found that the annual expenditure on telecommunications in the Riverina was in excess of $215 million (Riverina Regional Development Board, 2003a; 2003b, p. 21).

Using this information, the consultants for this stage of the project identified opportunities where the Board could take an active role in the telecommunications market in the Riverina. The Board subsequently invited the telecommunications industry to submit expressions of interest to address the following needs:

•   improved 'local loop' infrastructure as well as improved availability and access to broadband services;

•   'market best' pricing for telephone services for the Riverina;

•   funding and resources to assist with the marketing and promotion of telecommunications initiatives within the region;

•   training and awareness-raising programs to support the proposed developments;

•   other funding initiatives that would deliver additional value to the project.

Telstra Country Wide was selected from a number of applicants as it offered the following advantages:

•   greater value to the region through a partnership approach;

•   the ability to have a positive impact upon all parts of the Riverina region;

•   a multi-faceted program that required little or no funding from RRDB beyond a coordination role;

•   an established and significant market share that would provide benefits to the Riverina without requiring changes to services or delivery;

•   the ability to quickly generate a sizeable infrastructure fund to be used for region-wide improvements.

As a result of establishing the relationship with Telstra Country Wide to create Riverina First, two funds were set up, a development fund to implement telecommunications infrastructure, and a community fund to support community projects. Telstra contributed 1.5 cents to the Fund every time a registered Riverina customer made a call via landline. Customers registered using a freecall number, registration incurring no cost and having no effect on the customer's bill (Riverina Regional Development Board, 2003a; 2004).

In the first two years of its operation, more than $250,000 was committed from the Development Fund to build four previously unbudgeted mobile telephone base stations. The first of these, a 'Next G' mobile phone base station in the town of Rankin Springs, was commissioned on 30 May 2007. Three others were commissioned in 2007, at Marrar, Walla Walla and Holbrook. This infrastructure was in addition to Telstra's planned investments in the region (Riverina Regional Development Board, 2007).

The Community Fund component yielded over $100,000 in the first two

years to a range of community organizations for community projects. By the first half of 2007 there had been six distributions from the Fund. In the sixth round, eleven grants were made, the total amounting to over $160,000. The main projects funded were for improvements to community halls and sporting facilities, and for equipment for community groups such as pre-schools, playgroups and arts and craft groups (Riverina Regional Development Board, 2007). The 2008 round of grants to community groups took the amount allocated since the program began to $250,000, and expenditure in the development of mobile phone base stations for small communities reached over $1million (Riverina Regional Development Board, 2008).

Another project organised by the Board that had synergies with Riverina First was the 'Easy Commerce' program. This was designed to provide training for small businesses in developing their own websites, by helping them to become more efficient, and by assisting them to expand their markets through online services. Two short training sessions were provided to small business owners, at a cost of $165, to help them develop their own websites within the Riverina First portal. Only basic computer skills were required for entry to the program, and ongoing access to advice and other resources were provided (Riverina Regional Development Board, 2007).

Although the contractual arrangements for Riverina First between the Riverina Regional Development Board and Telstra were extended several times, they came to an end in June 2008. However, the Board of Riverina First, with the support of the local councils participating in the scheme, decided to invest the balance of funds held by Riverina First to generate income for future distribution to community organisations. It remains for the new Board of Regional Development Australia – Riverina to decide if it wishes to institute a similar policy and arrangements for the development of the region's telecommunications.

10. CONCLUSION

The development and operation of Riverina First by the Riverina Regional Development Board, with the support of other regional groups such as the Regional Organisations of Councils and local government authorities, provides an example of the suggestion of a number of writers that local and regional community-based organisations need to take the initiative in seeking the development of their telecommunications infrastructure and services to stimulate regional economic development. As these writers have pointed out, the high cost of communications infrastructure, spread over a wide geographic area with a relatively small population base, makes it unlikely that private enterprise and semi-public corporations will make the necessary capital investment in the short-to-medium term.

The action taken by the Riverina Regional Development Board in calling for expressions of interest from telecommunications providers helped to generate competition among the providers to maintain or increase their market share of the regional telecommunications market. The Board's initiative also stimulated Telstra to build infrastructure that might not have otherwise been provided until

much later. The scheme also helped to improve mobile phone 'blackspots' in the region, and to speed up the introduction of broadband services. As well as providing infrastructure, funds generated also supported local voluntary organisations.

Although detailed evaluation of the impact of the program on individual businesses and on the economic development of the region in general has not been undertaken, research on this in other regions in Australia and overseas, indicates that such programs result in regional economic development. This has been found to occur through the diversification of business opportunities, increased business efficiencies and productivity, the expansion of markets and job opportunities, together with the potential to attract new businesses and additional population to regional areas.

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