

IV.9

Infrastructure Development and the Digital Divide in Asia

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INTRODUCTION

In an era of terrorist activities, tightened security, reduced air travel, looming recession and unemployment, the potential for large investments in the information and communication technology (ICT) infrastructure does not appear promising. This problem is very significant for the emerging economies of the Asia Pacific region where the war in Afghanistan means reduced exports to the United States, less foreign direct investment and reduced access to venture capital as a result of higher risk and political uncertainty. The trend is towards greater protection of domestic markets, with an emphasis on the regulatory regime. William Melody (1999a) argued that the diversity of East Asia may make it impossible for the Anglo-Saxon model of telecom reform to be applied in all Asian countries. Despite this diversity, however, telecom reform and infrastructure investment are resulting in higher telephone densities in the region as a whole and this is supporting hopes that investment will provide a basis for bridging the various digital divides. This contribution examines recent developments aimed at strengthening the telecom infrastructure in the region based on investment in the 'Internet economy' and new wireless networks.

THE INTERNET ECONOMY

The members of the Association of South East Asian Nations (ASEAN) Plus Three have diverse economic and political regimes but they are home to over 500 million people with a combined Gross Domestic Product of US\$ 700 billion. If China, Japan and South Korea are taken into account, this region could encompass a giant trading bloc covering one-third of the world's population with a GDP of US\$ 7 trillion, although this is not likely in the near future.

Asia has made strong inroads into the world Internet economy which is expected to exceed one trillion dollars by the end of 2002, as estimated by Accenture, a US-based consulting firm. Hong Kong, Singapore, Malaysia and Taiwan have invested vast sums of money in teleports, cyberports, cybercities and technology parks to advance the use of the Internet and e-commerce. South Korea has taken the lead in using broadband technologies for electronic data exchange and storage. Internet users in the region reached about 37 million by 2001, as compared with Europe's

30 million (Senmoto 2001). The 'digital divide' within and between the countries in the region raises the question of the public interest. Should the state monopolies that provide communication services continue and does the state have a positive role in bridging the divide? Western monopoly providers achieved universal service in a relatively stable technological environment, but Asia's service providers have offered sophisticated services to metropolitan areas without meeting the basic needs of the remote areas (see Melody 1990a). The state-owned monopolies have been, or are in the process of being, privatised or they are undergoing structural changes to introduce greater liberalisation.

THE POTENTIAL OF WIRELESS NETWORKS

Wireless communication is spreading like wild fire in the Asian countries, but it is costly for low-income countries. These services are contributing to a widening of the regional digital divide between Japan and South Korea, and their neighbours. Nearly nine million users in Japan use the DoCoMo or I-Mode cellular phones, giving NTT 25% higher revenues than from its land-based microwave service. According to *Business Week* (2000), the global market for Internet-ready cell phones is expected to increase to one trillion dollars by 2005. Competition between Japanese, South Korean and Taiwanese manufacturers of cell phones has reduced the cost per subscriber and, as China enters the same market, the advantages of economies of scale will further reduce prices. In Japan in October 2001 the 3G (third generation cellular telecom system) was rolled out. As the wireless revolution enters a new phase in Asia, the potential for its rapid deployment is promising, although there may be a problem because of the shortage of spectrum. Asian countries are seeking a fairer way of allocating the broadband spectrum. This natural resource is important because, as newer technologies are introduced, the demand for its use is exploding (Jussawalla 1994). The licence fees charged for use of the broadband spectrum are creating huge financing problems for suppliers and, in Europe, the spectrum auctions were mismanaged and failed to improve efficiency or to enhance competition (Melody 2001b).

The promise of 3G is that users will surf the net on wireless notebooks and watch video clips on their telephones. In Japan, the I-Mode is equipped with cameras so that pictures can be e-mailed directly from the telephone. The major change is that in 2002, no one knows from which location on the Internet a search originates. With the web-on-the-go, there are base stations whose locations are precisely known. There is great pressure on licence holders of 3G to roll out the service and to market it in a competitive environment (Jussawalla 2001). Broadband Internet access and Internet access figures provide a benchmark of the progress of

countries in the region towards establishing an advanced infrastructure (see Table 4.9.1). Comsys (UK) estimates that 25% of Asia's one billion households will be in the market for broadband using digital subscriber line or wireless broadband services by 2010 (*Broadband Asia 2000*).

Table IV.9.1 Broadband Penetration in Asia, 2000

Country	Internet Users (million)	Broadband Users (thousand)	Broadband Penetration %
Taiwan	3,474	217	6.2
Singapore	1,988	79	4.0
China	5,217	68	1.3
South Korea	9,157	3,491	38.1
Hong Kong	3,259	359	11.0
Australia	3,205	76	2.4
Japan	18,590	636	3.4

Source: eAccess Ltd, IDC Research 2001.

CHINA'S INFRASTRUCTURE DEVELOPMENT EXPERIENCE

The recent experience of China – as one of the potentially largest growth markets for all aspects of ICTs in the world indicates that the process of infrastructure development is influenced by a variety of endogenous and exogenous factors. China has the second largest market in the world for telecom equipment. It invested US\$ 100 billion in its ninth Five Year Plan between 1995 and 2000 to upgrade and extend its fibre optic landlines and digital exchanges. Internet connections have been installed under the direction of the Ministry of Information Industry (MII) since 1998 in 43 cities to form the Chinapac network. MII also plans to connect 1,000 universities to the CERN (China Educational Research Network).

China was admitted to the World Trade Organization (WTO) in November 2002 and will have to make major changes in its economy over the first three-year round of negotiations. It will have to provide market access so that suppliers from

other countries can reach its 1.3 billion consumers. At present foreign direct investment and participation restrictions are set at 40% under the China-China-Foreign (CCF) policy – or Zhou Zhong Wai – and this will have to be reduced. Drastic reductions in tariff and non-tariff trade barriers will also be necessary in return for which Chinese goods, services and capital will gain greater entry into foreign markets, fuelling its rise as a world economic power.

Combined imports and exports now amount to US\$ 475 billion per year, making China the world's seventh largest trading nation (Dorgan 2001). However restrictions remain in place on the activities of foreign suppliers. For example, in November 2001, the government announced that it will charge every foreign broadcaster US\$ 100,000 annually for the use of television channels on its satellite systems (Greenberg 2001). This gives the Government the power to switch off channels that state censors deem unacceptable. In 2001, after protracted negotiations, the BBC won approval to broadcast its news service to embassies and hotels and AOL-Time Warner was given approval to serve the province of Guangdong. News Corporation and Turner Broadcasting will have no difficulty in paying the fees as their advertising revenues are in the billions of dollars.

Media protection in China is an offshoot of the Government's fear of the role of media in East Germany towards the end of communist rule. China's regulators may be learning from the experiences of the European National Regulatory Authorities and they may seek to ensure the accountability of industry players so that they contribute to social and economic objectives (Melody 1999a). Chinese satellites have excess capacity and the MII can earn revenues from foreign broadcasters. But this new ruling may exacerbate the digital divide as countries like India, Malaysia and Thailand will have to pay a costly broadcasting fee which may not be justified by their assessment of the benefits.

In the Chinese market, two million cellular phone users are being added every month and 14 million pagers are being imported annually in addition to the domestic manufacture of pagers. In 1994 a cell phone in China cost US\$ 2,000 but by 2002, the cost had declined to \$200. China Mobile has awarded a contract worth US\$ 40 million to Siemens to extend its wireless network and a new telecom giant, China Telecommunications Satellite Group Corporation, involving Chinasat and the Asia Pacific Satellite Company in Hong Kong, has been authorised to provide telecom services. Although the mobile phone market is expected to prosper, the road to the next generation 3G services may be a long one for China (Asia Tele.com 2001).

In spite of the rapid deployment of ICTs there is a substantial digital divide within China. Workers in Shanghai earn eight times the national per capita average income, and a rural worker earns only an average per capita of US\$ 166 annually. The poverty belt stretches from Yunnan in the south to Xingiang in the north (Jussawalla 2001).

CONCLUSION

Political and social uncertainties continue to plague the emerging and advanced economies of Asia. The digital divide may not be the same as in other regions and policies may differ in terms of the strategies devised to convert the digital divide into a digital dividend. All the economies in the regions are continuing to increase their investments in ICTs. A rising tide may not raise all boats at the same time, but the trend is clear. The promise of the digital age is coming closer to fulfilment for the low-income countries of Asia. However, even in a wealthy economy like Canada, Melody (1993b) argued that there is an imperative for a telecom infrastructure policy as a defence against loss of sovereignty. In Canada's case there is the threat of competitive entry by American-owned firms and its economic, social, cultural and political implications. Internet service demand is exploding in Asian countries, but there are restrictions on its use as a result of China's fear of a loss of sovereignty and Singapore's concerns about a cultural invasion.

The hope that infrastructure development, combined with market reforms and regulation, will contribute to improved growth prospects and to reducing the digital divide has been strengthened by the resolution of the G-8 country ministers in Okinawa, Japan in July 2000. Ministers agreed that the affluent nations would help to bridge the global digital divide through initiatives to stimulate the transfer of technology, capital and human resources to the underdeveloped regions. But the 'missing link' remains an unsolved problem for international policy makers. There is also opposition from some non-governmental organisations, labour unions and other groups as was witnessed at the meeting of the G-8 ministers in 2001 in Genoa. The terrorism crisis since September 2001, suggests that digital divide issues may again be placed on the back burner of world affairs.