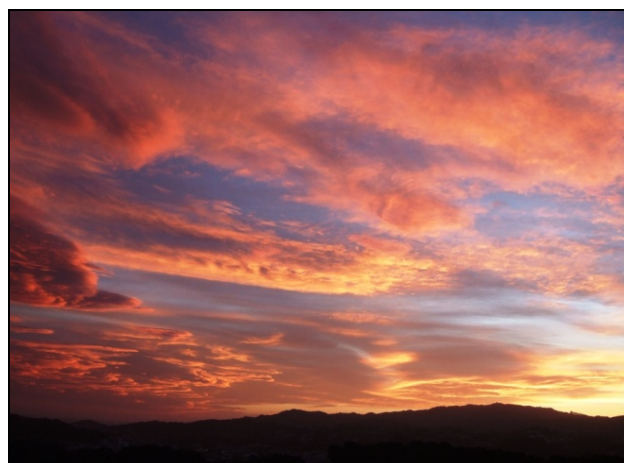
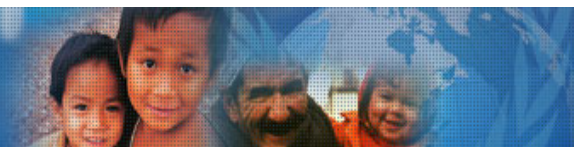




Telecommunications Regulation - Competition - ICT Access in the Asia Pacific Region

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List of Acronyms and Abbreviations

BWA	Broadband Wireless Access
CDMA	Code Division Multiple Access – Wireless telephone system
CNC	China Netcom
CPI	Consumer Price Index
DSL	Digital Subscriber Line
DTS	Department of Telecommunication Services
EOIP	Everything Over Internet
FBO	Facilities-Based Operators
FCFS	First come first served
Ftth	Fibre to the home
GOB	Government of Bangladesh
GPRS	General Packet Radio Service
ICNC	Information Communications Networking Company
ICX	Interconnection Exchange
IGW	International Gateway
IIG	International Internet Gateway
IP	Internet Protocol
ISP	Internet Service Providers
ITI	Indian state owned Telecom Company
KT	Korea Telecom
LDC	Least Developed Countries
LLDC	Landlocked Developing Countries
MII	Ministry of Information Industry
MIIT	Ministry of Information Technology
Mobile	Cellular Mobile
MOR	Ministry of Railways
MPTC	Ministry of Posts and Telecommunications
MSC	Malaysia Multimedia Super Corridor
MT	Mongolian Telecom Corporation
MTP	Ministry of Posts and Telecommunications
NGN	Next Generation Network
NTTN	Nationwide Telecommunication Transmission Network
PAS	Personal Access System
PHS	Personal Handy-phone System
POTS	Plain Old Telephone Service

PSTN	Public Switched Telecommunication Network
QoS	Quality of Service
SBO	Services-Based Operators
SMP	Significant Market Power
SOE	State Owned Enterprise
SSNIP	small but significant and non-transitory increase in price
TC	Telecom Cambodia
TOR	Terms of Reference
TRAI	Telecommunications Regulatory Authority of India
UCL	Unified Carrier Licenses
ULR	Unified Licence Regime
USA	United States of America
USO	Universal Service Obligation
VoIP	Voice over Internet Protocol
VSNL	Videsh Sanchar Nigam Limited
WCDMA	Wireless CDMA
MVNO	Mobile Virtual Network Operators

Glossary of Terms

DMB	Digital Multimedia Broadcasting is a digital radio transmission technology developed by Republic of Korea as part of the national IT project for sending multimedia such as TV, radio and datacasting to mobile devices such as mobile phones. Sometimes known as mobile TV, DMB is not the same as Digital Audio Broadcasting developed as a research project for the European Union. DMB has also some similarities with the main competing mobile TV standard, DVB-H.
DSL	Digital Subscriber Line (DSL) is a technology to provide digital data transmission over the wires of a local telephone network. DSL originally stood for digital subscriber loop. The term Digital Subscriber Line is widely understood to mean Asymmetric Digital Subscriber Line (ADSL); the most commonly installed technical varieties of DSL.
HSDPA	High-Speed Downlink Packet Access (HSDPA) is an enhanced 3G (third generation) mobile telephony communications protocol. It is based on Universal Mobile Telecommunications System (UMTS) but with higher data transfer speeds and capacity.
HSUPA	High-Speed Uplink Packet Access is a 3G mobile telephony protocol with up-link speeds up to 5.76 Mbit/s. The name HSUPA was created by Nokia. The technical purpose of the feature is to increase capacity and throughput and reduce delay.
Regulatory Compact	Agreement between the authorities and a telecommunications company that offers protection from competition in return for tariff and service regulation
UMTS	Universal Mobile Telecommunications System one of the 3 rd generation (3G) mobile telecommunications technologies, also being developed into a 4G technology. Being a complete network system, UMTS includes a radio access network (UMTS Terrestrial Radio Access Network, or UTRAN), the core network (Mobile Application Part, or MAP), as well as authentication of users via USIM cards (Subscriber Identity Module)
VDSL	VDSL or VHDSL (Very High Bitrate DSL) is a DSL technology. It provides faster data transmission (up to 52 Mbps downstream and 16 Mbps upstream) over a single flat pair of copper wires. It is capable of supporting high bandwidth applications such as HDTV, as well as telephone services

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and general Internet access, over a single connection.

WiBro (Wireless Broadband) is a wireless broadband Internet technology developed by the Republic of Korean telecoms industry. It is the Republic of Korean service name for IEEE 802.16e (the mobile WiMAX) international standard. WiBro was devised to overcome the data rate limitation of mobile phones.

1. Introduction

1.1 Background

1. Telecommunications began on March 7, 1876, with Alexander Graham Bell's patent 174,465, from the United States (USA) Patent Office. The patent covered "apparatus for, transmitting vocal or other sounds telegraphically ... by causing electrical undulations, similar ... to the vibrations of the air accompanying ... vocal or other sound". Undulations quickly replaced earlier forms of communication, including "Flag, signals or heliograph". By 2006, the Business was worth approximately US\$1.2 trillion.
2. Most governments transformed the first generation of operators, into state monopolies (prohibiting competition). The similarity between telegraph and telephone lines led governments to lumping them with telegraph agencies. Even in the United States of America, with the privately owned Bell Organisation, eventually US Authorities needed to use the Anti-Trust laws to ensure survival of independent operators. Bell's long-distance and international business became a regulated monopoly.
3. By the mid 1980s, both State Owned Enterprise (SOE) and regulated monopolies were unable to cope with new technology, and customers' needs. By 1994 it was said:

"In rich and poor nations alike, governments are trying to adapt their policies to meet the changing technological and economic conditions affecting the supply of telecommunications services on the one hand, and to satisfy the rising and more diverse demand for services on the other."¹
4. During the ensuing 16 years, many countries have liberalised telecoms sectors and opened them to competition. However, developments in technology, particularly broadband Internet, have shown the limitations of commercialisation and conventional regulation in promoting the uptake of ICT.
5. UNESCAP has undertaken analysis that highlights differential rates of uptake of ICT among UNESCAP member States. UNESCAP's analysis reveals wide disparities in Internet users per 100 people (New Zealand has 80; 25 countries in the region still have less than 10). UNESCAP has seen signs of slow growth of access to the Internet and information services and applications among Less Developed Countries (LDC)s, Landlocked Developing Countries (LLDC)s and Small Island Developing States (SIDS).
6. UNESCAP has shown that without widely available and affordable ICT access in under-served areas of LDCs, LLDCs and SIDS widespread application of ICT for socioeconomic development would be difficult. It will be almost impossible to take advantage of information services and applications, evidence-based sustainable and inclusive socio-economic development, as envisioned by WSIS outcome documents,
7. The disparity is even greater in the trend of broadband technologies where a converged platform is providing opportunities for UNESCAP members to skip many costly traditional ICT development modes, yet connections to broadband are lagging. The question has arisen, **is inappropriate regulation slowing progress in these member countries?**
8. As a first step in implementing the project "Strengthening ICT Policies and Applications to Achieve MDGs and WSIS goals in Asia and the Pacific" to answer this question, UNESCAP organized two sub-regional workshops, one for Southeast Asia and the Pacific

¹ *Telecommunications sector Reform in Asia, Towards a New Pragmatism*, Peter L. Smith and Gregory Staple, The World Bank, Discussion Paper 232, 1994

and the other on South and Central Asia in October 2009. Based on the discussions on technology and policy options during the workshops **this Report aims to identify possible regulatory reforms among participating member countries** to address the challenges identified by the seminar participants.

1.2 Adapt to Change

9. Disparities in the growth rate of broadband development among UNESCAP members is only one factor showing that the need to adapt is as strong today as it was 14 years ago and suggest that the scene of action has moved.

- Explosive growth of mobile phones, exceeding fixed line use in developed (e.g. Republic of Korea) as well as developing countries (Cambodia, Vietnam and most of Africa),
- In Bangladesh and Cambodia mobile phones have supplanted the fixed wire based utility for new services, and elsewhere, notably Republic of Korea are the principal competitor for voice and Internet with fixed-lines declining fast,
- Mobiles are the favoured mode of communication for voice calls as each person has unique numbers and trawls through PBX systems are unnecessary,
- 3G technologies are making wireless Internet traffic a viable option and there has been explosive growth in the demand for wireless data capacity,
- There has been an immense shift of data (e.g. Television) from broadcast to fixed and mobile broadband and of voice traffic from lines to wireless mobiles,
- Cable connections remain favoured in all applications where uninterrupted reliable data transmission is required, (e.g. banking and control systems),
- Major companies are experiencing a transformation where 85 percent of traffic is data traffic and with Internet Protocol Switching, systems are rapidly moving from Voice Over Internet Protocol (VOIP) to Everything Over Internet Protocol (X-OIP),
- An explosion of telephone handset based services is underway, moving on from services such as answering, call waiting, call forwarding etc., to Internet traffic, banking, entertainment and television,
- Lucrative revenues from international and long distance traffic are collapsing fast; the international accounting system collapsed in the early 2000's and revenues have plummeted since with services such as Skype using VoIP technologies,
- This in turn is driving a tendency to share facilities and to have specialised transmission-only operators as ways to share facilities and reduce costs, with the developing world, especially India the notable pioneer in this field,
- The most staggering development has been the explosion of new connections with more than two million new subscribers a week in India and similar figures in China; most of the subscriber's growth is taking place in the developing World.
- Not only has there been the huge increase in new connections, but the availability of wireless internet using 3G, has seen explosive growth in the demand for bandwidth, to meet the demand for data.

10. Despite this enormous progress, there are concerns that a new digital divide is opening up between the developed and the underdeveloped, with broadband connections in the developing world falling further behind the numbers in the developed. This report asks why we need telecommunications regulation and asks how telecommunications has changed since liberalisation began in the 1980s. It also seeks to identify appropriate future approaches to regulation based on the experience of several Asian and Pacific countries.

2. Importance of Telecommunications

11. Despite the rapid advance of new technologies and falling prices, many people remain surprised at the rapid growth of telecommunications since the early 1990s. Box 1 illustrates the helplessness felt by many foreigners in developing countries in the 1980s when the problems of putting in place adequate infrastructure seemed insuperable.
12. The wave of liberalisation of telecommunications markets, deregulation and privatisation that swept the World in the 1980s began to offer new hope. Instead of worrying about how to provide basic telecommunications services, the focus moved to a discussion of the potential size of the market.

2.1 Potential Market

13. Many ask, how can poor people afford what was once thought of as a luxury item? Intuitively, the reaction is to believe that poor people cannot afford a mobile telephone. However, if people share the use of a phone and the majority of calls are from relatives and friends in a more prosperous town, then the costs to the poor villager are significantly lower.
14. In a 2006 report² on the growth of mobile phones in Africa showed a transformation underway that was dramatic. The methodology taken from a study in Cambodia in 2001, applied to national data in a range of low income African countries, showed that societies that are either not well organised or very poor have a large unsatisfied demand.
15. A feature of the analysis was a situation of actual demand being larger than the estimated market. This may show up weaknesses in GDP figures, but it also shows that mobile telecommunications are not only filling a communication gap, but they are replacing other more expensive communication methods in the developing world.
16. If researchers look more broadly at the communications market and consider the alternative methods of getting messages to or from the capital city, the popularity of mobile telephones is economically rational. In the absence of

Box 1: We don't need phones here!

1980's agency country manager to Consultant:

"This country does not need any telecommunications."

Consultant:

"How do you communicate yourself?"

Agency manager:

"We installed an own nationwide radio system, because the public telephone system does not work."

(Cited Arno Wirzenius – Funny Telephone Experiences)

<http://www.saunalahti.fi/~arnow/index.html> 2003

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