

Are Telecommunications Regulations and Policies Able to Accommodate the Rapid Development in Technologies? A Comparative Study of Regulations Adopted in Selected Countries in Asia, Europe and the Pacific Island Nations.

Michelle Chan*

Clifford Chance

Hong Kong SAR, China

[\(View Abstract\)](#)

1. INTRODUCTION

It has long been accepted that a modern economy is dependent upon an efficient telecommunications infrastructure and effective communications services. However, global diversity in terms of cultural, ethnic and geographical indicators, and also economic development and political system and stability, means that there is also diversity in the state of development of telecommunications markets at a national level and in the policies and regulations underpinning those markets.

The diversity is further amplified by the rapid speed at which communications technologies have been developed. In the short space of twenty years, the telecommunications industry saw the widespread deployment of cellular and wireless technologies, including wireless local loop, wireless LAN, packet switched technology, fiber-optic submarine cable systems, VSAT satellites etc. The advent of these new technologies not only brings about changes to the telecommunications sector itself, it also has tremendous impact on other sectors,¹ and has even been described as the "third industrial revolution".²

Compared to the pace at which technologies have been developed, telecommunications regulations and policies are often more static. There is, not surprisingly, a legitimate concern that notwithstanding the existence of such new technologies, their use or deployment may be stifled by existing regulations and policies which were formulated against a different backdrop of technologies and to address different social, economic and political concern. This concern is shared equally amongst commercial entities, such as telecommunications companies, which wish to take advantage of such new technologies to explore new business opportunities, to improve the quality and at the same time to lower the cost of their existing services, and the public in general who wish to receive better and more affordable telecommunications services.

This paper attempts to give a purview on the extent to which telecommunications regulations and policies are able to accommodate this advent of new technologies.

The paper is divided into four sections:

- The first section (Section 2) briefly outlines the first major impact which brought upon the telecommunications sector by the rapid development in

telecommunications technologies, the process which has been seen sweeping over almost all developed and increasingly developing countries in the past twenty years: liberalisation of the telecommunications markets, and in turn, the impact liberalisation has on the formulation of telecommunications regulations and policies;

- The second section (Section 3) goes on to examine, by reference to examples and case studies drawn from selected countries in Asia and Europe, the extent to which telecommunications regulations and policies, which have been formulated to facilitate competition in the telecommunications market, are able to accommodate the emergence of new "telecommunications" technologies; this section also examines whether this issue is relevant insofar as the Pacific Island Nations are concerned;
- For those countries which appear to have in place telecommunications policies and regulations which lag behind technological development, the third section (Section 4) goes on to explore some of the possible political, social and economic considerations which such countries may have taken into account in formulating or maintaining such policies and regulations; and
- Finally, the last section (Section 5) sets out a few observations based on the discussions outlined in the previous sections.

2. IMPACT OF LIBERALISATION ON TELECOMMUNICATIONS POLICIES AND REGULATIONS

There is no doubt that the main drivers for liberalisation of a country's telecoms market include the desire to develop modern telecoms infrastructure and the wish to introduce competition into the market so as to address what are often seen as the disadvantages of a monopolistic or dominant state-owned entity, namely: poor operating performance, services being unresponsive to consumer demand, weak financial positions, bloated work force, inadequate capital investment, a bureaucratic decision-making process, distorted prices and tariffs and the lack of international awareness or competitive sensitivities on the part of the management.

The advent of new technologies and technological innovations in telecommunications, such as cellular radio systems, fiber-optic cables, advanced/digital switches, international satellite systems, also cast serious doubt on the "conventional" view that telecommunications networks are better provided by a monopoly so as to take advantage of the economies of scale, when alternative networks can now be built relatively cheaply and are more effective in serving areas which cannot be served by "traditional" networks because the cost of doing so was previously prohibitive.³ And even if a monopoly is to be maintained at the network level, with increasing dependence of the different business sectors on telecommunications, competition should at least be introduced at the service level.

Liberalisation of the telecommunications market therefore became imminent. Although there are numerous approaches to liberalisation, the major common elements often include:

- In most pre-liberalised telecoms markets, telecoms services are provided exclusively by the government, either directly or through a government controlled entity.
- Policy and regulatory developments to enable the liberalisation process, which often are phased in, or revised, during the liberalisation process.
- The liberalisation process often begins with the separation of operational and regulatory functions within the government body that provides the telecoms services.
- This is generally followed by (not necessarily in this order):
 - (i) the corporatisation of the operational body;
 - (ii) the establishment of an independent or semi-independent regulator;
 - (iii) the privatisation (full or partial) of the new corporate entity; and
 - (iv) the introduction of competition in the provision of various services.

2.1 Pre-liberalised Telecoms Market

In general, prior to the liberalization of a telecommunications market, the issue of whether telecoms regulations can keep up with technological developments is not of particular relevance.

In a pre-liberalised telecoms market, telecoms services are generally provided by the government (through a government department) or a wholly state-owned entity, and the government often also sets policy, including the technologies it may see fit to deploy, and discharges whatever regulatory functions may be necessary. For example, in the UK, the General Post Office, which was a government department headed by a government minister, had a monopoly over all telecoms and postal services in the UK before 1981.⁴ Similarly, in the People's Republic of China, until 1994, the Ministry of Posts and Telecommunications ("MPT") was the monopoly provider of local, long-distance and international telecoms services. In Nauru, the smallest republic in the world with a population of 12,570,⁵ domestic and international telecommunications services continue to be provided by the government through the Department of Telecommunications.

It follows from this that in a pre-liberalised market, implementation of new technologies is not likely to be constrained by regulations. In fact, in a pre-liberalised market where the government is the provider of telecom services, there is generally no need for detailed regulation. So, for example, in the PRC, the telecoms operators and service providers were operating in the absence of any comprehensive telecoms regulations until 2000, when the PRC Telecommunications Regulations were promulgated as a

forerunner to the long-awaited PRC Telecommunications Law.⁶ In Palau, the state-owned monopoly, Palau National Communications Corporation ("PNCC"), incorporated in 1982, has been operating in the absence of any telecoms legislation.⁷

2.2 Policy and Regulatory Developments to Enable Liberalisation

Although some countries may not have a particularly well-developed regulatory framework governing their telecoms sector pre-liberalisation, each country will have at least some regulations relevant to the sector. The regulatory changes which will be required to give effect to market liberalisation will depend on a number of factors including: the nature of the country's political system and its political, economic and social goals; how a government believes the sector should be structured to realise these goals (and comply with any international obligations, such as WTO commitments); and what matters are subject to existing regulations.

National policies, without being identical, may pave the way for liberalisation. Many countries, for instance, Hong Kong, Singapore, Malaysia and Sri Lanka, have formulated policies on information, communication and technology ("ICT") and have set broader visions for the direction of the ICT sector to enable its development.

For example, the Malaysian government has set a sector-specific policy for ICT, through which Malaysia aims to become a major global centre and hub.⁸ This national policy has prompted Malaysia to be at the forefront with their ICT law. In 1998, Malaysia enacted the Malaysian Communications and Multimedia Act in order to create an entirely new converged licensing framework which is technology neutral. Hong Kong and Singapore have similar policies aimed at becoming the pre-eminent communications hub for the region.⁹

Unlike Malaysia, Hong Kong or Singapore, the national policies adopted by Sri Lanka have a different objective: making available affordable and effective choices of communications for the citizens of Sri Lanka.¹⁰ It is however interesting to observe that to achieve this objective, the policies adopted by Sri Lanka for ICT put much emphasis on implementing a technologically neutral and competitive structure,¹¹ which is not vastly dissimilar to the structure adopted by Singapore or Malaysia.

The Pacific Island Nations are not lagging behind developed countries too much, in terms of their national policy formulation. A regional workshop¹² was held in April in 2003 among representatives of various Pacific Island Nations to discuss their respective national ICT strategy development. It was shown that many Pacific Island Nations had already included ICT strategies as part of their national policies. For instance, Fiji has included various policies as part of its national development plan for 2003-2005 to liberalise the telecoms sector in the medium term and to promote development in ICT by ensuring an appropriate regulatory and legal framework are put in place.¹³

Public policy issues, such as the provision of universal service, the promotion of technological innovation, fair tariffs, customer response, interoperability between and open access to and use of, networks, internationalisation of services and mechanisms

for attracting investment are often redefined in the context of a competitive environment and included in an effective new regulatory structure.

2.3 Separation of Regulation and Operation

As mentioned, the first step to liberalising a national telecoms market is often the separation (at least in theory) of operational and regulatory functions within the government body which provides the telecommunications services. Regulatory bodies vary in type, and may include:

- A government ministry or distinct body within a government department, such as was the case in the PRC, where a commercial arm of the MPT was established in 1994 under the control of the Director General of Telecommunications to carry on the telecoms operations of the MPT (later this division became known as China Telecom), in order to separate the regulatory and operational functions of the MPT. Similarly in Samoa, in 1999, the Post and Telecommunication Department was split into an operational unit (Samoa Communications Ltd) and a new governmental body with certain policy and regulatory attributions (the Ministry of Posts and Telecommunications) by virtue of the new Postal and Telecommunications Services Act 1999 ("PTS Act"). It is interesting to note that the Ministry is not expressly authorised under the PTS Act to regulate but rather, among other things, to assist in setting up a regulatory environment and to advise the Minister on matters relating to licensing.¹⁴
- An autonomous body with the power to make decisions not reviewable by the government, such as the Papua New Guinea Telecommunications Authority ("PANGTEL"). It is an independent self-funding statutory authority responsible for regulating the areas of technology, standards and service quality in the telecoms industry. PANGTEL's previous economic regulatory functions, such as the issuance and enforcement of licences, have now been transferred to the Independent Consumer and Competition Commission ("ICCC"), which was established in April 2002.
- An independent official supported by a semi-autonomous body which is subject to governmental review in certain circumstances, but which in practice enjoys a high level of independence, as is the case in Hong Kong, where the Telecommunications Authority, an independent official, is supported by the Office of the Telecommunications Authority ("OFTA"), which was set up in 1993.

It is interesting to note that not all countries commence the liberalisation of their telecoms markets with the appointment of a sector specific regulator. For example, when liberalisation of the sector commenced in New Zealand, the government, operating under a policy of light handed regulation, determined that the market would be regulated by market forces, with disputes between operators being determined by commercial negotiation or under New Zealand's general competition law framework. However, at a time when many countries with developed competition law frameworks are considering moving away from sector specific regulation, and towards reliance on

general competition law, and more than a decade after liberalisation began in New Zealand, in 2001 the New Zealand Government passed landmark telecoms legislation designed to introduce a new framework for regulation including the establishment of a specific regulatory watchdog.

2.4 Introduction of Competition

Another major step in the liberalisation process is the introduction of competition in the telecoms market. When new competitors are introduced into an otherwise monopolistic telecoms market, new regulations (e.g. regulations on interconnection, pricing, etc) are necessary in order to liberalise the market effectively. Competition may be phased in, and some countries have controlled the process by first introducing a duopoly - for example, in the UK, before British Telecom was privatised, the UK government awarded a full telecoms licence to a network competitor, Mercury, in 1982.¹⁵ The duopoly was allowed to operate for a period of seven years, so as to introduce competition gradually into the telecoms market. After the duopoly policy ended, full competition was introduced in domestic services in 1991 and in international service in 1996.

Competition was also introduced in phases in Hong Kong. After the exclusive franchise granted to the incumbent, Hong Kong Telecom Company Limited ("HKT") (now known as PCCW-HKT Telephone Limited), expired in 1995, three new entrants were allowed to compete with the incumbent in the domestic fixed telecoms services market.¹⁶ A moratorium was then put in place on the award of further licences for the local fixed telecoms market until 31 December 2002. From 1 January 2003 onwards, the local fixed market has been fully liberalised.

Tonga is a rare example among the Pacific Island Nations to have a duopoly in its telecoms market. The second carrier, Tonfon, entered the market in mid-2002. It is providing all kinds of telecoms services in voice, video, data, Internet, etc via its wireless network and by using voice over the Internet ("VoIP") technology. Tonfon has proven that competition is possible in small markets like Tonga and telephone rates in Tonga have gone down substantially since Tonfon's entry.

2.5 Examples of Approaches to Liberalisation

Liberalisation of telecommunications market in the Asia Pacific region, has generally lagged behind liberalisation in major western economies, such as the United States and the UK.¹⁷ As mentioned earlier, this can be explained by reference to the diversity of political systems, and socio-economic development among the countries in the region. To take a few illustrations:

Liberalisation in the Hong Kong telecoms market started well in advance of most other economies in the region, with the introduction of competition in the mobile sector and in the provision of terminal equipment in the mid-1980s, but it was not until 1992 that the Hong Kong government undertook a comprehensive review of its telecoms policies, shortly before the exclusive franchise granted to the incumbent, HKT, was due to expire. Three new domestic fixed licences were issued in 1995 and a moratorium on

the issuance of further domestic fixed licences was then put in place until the end of 2002. The telecoms market in Hong Kong has now been fully liberalised in respect of all telecoms services.

The PRC is an example of a planned economy with an authoritarian political system and a policy of opening China up to foreign investment in a phased and systematic manner. As mentioned above, separation of operational and regulatory functions within the MPT took place in 1994, at which time China Unicom was established by a number of Government ministries to compete with China Telecom. However, many commentators have blamed China Unicom's inability to make a significant impact on China Telecom on the State's common interest in the incumbent (i.e. China Telecom) and the then regulator, MPT. Steps were taken to address this when in 1998 the MPT was reorganised and a new ministry, the Ministry of Information Industry ("MII"), was established as the PRC's main telecoms regulator. However, it was not until 2000 that the MII relinquished all controls over the operational functions of the incumbent operator, China Telecom.

Liberalisation of the telecoms industry is in its infancy in the Pacific Island Nations. Many Pacific Island Nations which have created a separate regulatory function and service provider, still have their policy and regulatory functions located within the same government ministry/department. Only Papua New Guinea of the region has established a truly separate telecoms regulator, PANGTEL, which is responsible for technical regulation. All licensing powers now vest with another independent regulator, ICCC. Telecoms services are still provided by the monopoly incumbent operators in almost all Pacific Island Nations, except Tonga as discussed above.

3 ARE REGULATIONS ABLE TO KEEP UP WITH RAPID DEVELOPMENT IN TECHNOLOGIES?

3.1 Regulations

Telecoms regulations sometimes are drafted based on existing technologies and are often service-specific. As such, when technologies develop such as to permit their application to different or even new telecom services, questions arise as to the extent to which telecom operators and service providers can utilize the new technology within the existing regulatory framework.

The emergence of convergence technology, which is generally understood to mean the technology which enables "progressive integration of [previously distinctive] network platforms to deliver similar range of audio, voice and data transmission services",¹⁸ creates a regulatory challenge to most countries' existing regulatory framework on telecommunications, information technology and broadcasting.

Internet telephony or VoIP, that is, the delivery of voice information using the internet protocol (IP packets), as opposed to the more traditional circuit committed protocol using the PSTN, for example, provides a good illustration on how different governments and regulators have responded to this new technological development under their

existing regulatory regime. In India, for instance, such service was expressly stated to be prohibited in the New Telecom Policy 1999 although the Indian Government did state categorically in the policy statement that it would monitor its impact on national development and review its position at an appropriate time. The prohibition was lifted in April 2002 when internet service providers in India are permitted to use such technology to provide voice services. Hong Kong, on the other hand, does not impose restrictions on the provision of voice services based on the VoIP technology by telecommunications service providers,¹⁹ in particular, the ISPs²⁰ as the regulatory regime in Hong Kong is, to an extent, technology neutral.

Technology specific regulations are not uncommon and invariably is a feature in countries that have a more "planned" liberalisation policy. For example, in the PRC, the government exerts a tight control on the use of radio spectrum and manages the types of technology that mobile operators and service providers may adopt. The development and growth of "Little Smart", technically known as PHS (personal handyphone system), has, as such, created a regulatory challenge over the licensing regime. To the user, the service is accessed via a wireless handset, and thus "Little Smart" has some of the appearance and functionality of a mobile service, but it is in fact built onto the fixed line network infrastructure, and provides only limited mobility to users. Given the popularity of cellular mobile services in China, for several years China Telecom and, more recently, China Netcom, the fixed network operators, have been experimenting with "Little Smart" as a way to get a foot in the door with a "mobile" service offering.²¹ What began as an experiment has led to a widespread roll-out and uptake in many of China's cities, not least because services can be provided at charges based on fixed line rates, which are much lower than charges for mobile cellular services in China. The relevant regulations did not anticipate such technology and both China Netcom and China Telecom had taken advantage of this grey area of the regulations. MIIT banned China Telecom and China Netcom from rolling-out the service in Beijing, Shanghai, Tianjian and Guangzhou. The Classification Catalogue which identifies the types of telecoms business which are licensable in China was revised in 2003 and includes limited mobility services under the fixed line head, and also radio access business under the network access head which in some way helps to remove the ambiguity, and may explain why, according to press reports, China Telecom and China Netcom have recently been granted authorisations to rollout mobile service based on the Little Smart technology.

The above example also illustrates that it is not only convergence technologies which are posing challenges to existing regulations. The clear demarcation between wireline networks/services and wireless networks/services in most regulations to a certain extent restrict the integration of wireline and wireless networks and services made possible by developments in technologies.²²

But there are still examples of regulations not keeping up with technology in more liberal regimes. For example, in Hong Kong, when the video on demand technology which permitted the delivery of large volume of audio and visual data over copper-wire telecommunications network was introduced, there was a controversy in the early '90s

as to whether the then incumbent, i.e. HKT, which wished to deploy the technology on its telecommunications network to provide interactive television services, should be permitted to do so under the then existing television regulations which defined television services on a "broadcasting" basis (i.e. point to "multi-point").²³

3.2 Policy-Making and Regulatory Functions

The convergence technology also raises questions such as whether it is artificial to retain regulatory separation of services such as telecommunications, information technology and broadcasting, and lends further weight to the argument for technology neutral regulation.

It has been observed in recent years that more and more governments are restructuring their telecoms, IT and media policy-making bodies to form one single entity to ensure delivery of consistent policies across these three sectors. For instance:

- MII in the PRC was formed by combining the communications and IT side ministry, and moves are afoot to create a new ministry which would combine MII and the State Administration of Radio, Film and Television;
- the Communications and Technology Branch in HK was established in the late 90's to oversee the formulation of policies on the telecommunications, information technology and broadcasting sectors; and
- in Singapore, the various functions previously assumed by the Ministry of Communications and Information Technology regarding information technology and telecommunications was transferred to the Ministry of Information and the Arts which was then renamed Ministry of Information, Communications and the Arts ("MITA") which oversees the telecommunications, broadcasting and information technology sectors.

In addition to the above, some countries also increasingly see the necessity of creating converged regulators to ensure that regulations would be consistently applied across the three sectors:

- in Malaysia, the Malaysian Communications and Multimedia Commission, a new independent regulator was thus created to regulate the telecommunications, broadcasting, multimedia, postal services and digital certification;
- in the UK, Ofcom takes over the regulatory functions of five existing regulators²⁴ that oversaw the IT/telecom/broadcasting sectors in the country;
- in Vietnam, the Ministry of Post and Telematics has been established to regulate the post, telecommunications and information technology sectors;

- the Telecommunications Regulatory Commission in Sri Lanka was renamed Communications Regulatory Commission and its function has been expanded to include overseeing the development of policies on IT/telecom/media; and
- in Tonga, the Tonga Communication Corporation Act 2000 creates the Department of Communications as an independent body to regulate Tonga's telecommunications and broadcasting sectors.

Even in countries which currently do not have converged regulators, there is an increasing co-operation between regulators which oversee the three sectors, for example the increase co-operation between OFTA and the Broadcasting Authority in Hong Kong.

Governments, both in developed and developing countries, also become increasingly aware that existing regulations in the telecommunications and the broadcasting sectors, last revamped to address regulatory issues brought about by liberalisation of these market, may no longer be able to accommodate the rapid technological developments (e.g. convergence technology) and new legal issues brought about by such developments,²⁵ when, for example, the distinctions between telecommunications and broadcasting become increasingly blurred, as illustrated by some of the examples above. Many countries, in this regard, have adopted more flexible and technology-neutral legislation, including, for instance, the Communications Act 2003 in the UK and the Communications and Multimedia Act in Malaysia and the Tonga Communication Corporation Act 2000 in Tonga.

It is perhaps interesting to observe that in countries which have a relatively low teledensity and hence governments are more concerned about improving the availability of affordable telecommunications services, regulations tend to be technology-neutral, rather than technology-specific. For example, in Sri Lanka, the government is keen to evolve the communications market into a technological neutral status to take advantage of the forces of convergence and market innovation which has led to the enactment of the Convergence Act.²⁶

3.3 A Look at the Pacific Island Nations

Insofar as the Pacific Island Nations are concerned, the general observation is that the regulatory frameworks fail to keep up with the pace of technological development and are outdated and incomplete.²⁷ In this regard, ITU has been assisting a number of the countries to put in place national policies and regulatory framework. In some ways, the Pacific Island Nations appear to be in the same situations as some of the pre-liberalised developed countries — that is while they may lack a coherent policy on ICT and an independent regulator and services continue to be provided by a monopoly, the issue of whether regulations are able to accommodate developments in technology seems largely irrelevant to these countries when there is no regulatory constraint on the technologies which the monopoly service provider may wish to adopt. In Palau, for example, PNCC, which, as noted above, operates in the absence of regulations, is able

to achieve one of the highest telephone penetration rate in the Pacific region (approximately 36.9%).²⁸ To take advantage of the development in technologies and the lack of any regulatory constraints, in considering extending its services to distant islands some 200 to 350 miles away from the main island, PNCC is able to assess various technologies including HF radio, GMPCS and VSAT satellite without the added consideration of whether there may be regulations resisting the use of any such technology.²⁹

4. FACTORS WHEN CONSIDERING REGULATING A CERTAIN TECHNOLOGY

In countries which do not adopt technology-neutral regulations, regulators and governments are often faced with the task of determining if a new technology should be regulated at all and if so, how such new technology should be regulated.

In making such determination, often consideration has to be given to the impact of the introduction of any new technology against any existing government policies.

In Hong Kong, for example, while the government decided that no new licensee would be introduced to the fixed wireline market in 1998 so that the three "new" fixed *wireline* licensees, introduced in 1995 to compete with the incumbent, could continue to rollout their respective networks to compete with the incumbent, a new category of licence to provide fixed telecom services based on the *fixed wireless technology* was nevertheless introduced to the fixed telecom market. The Hong Kong government based its decision on a number of its existing telecom policies, including that competition in the telecom industry needed to be further enhanced and that Hong Kong should serve as a pre-eminent communications hub for the region. Following the full liberalisation of the domestic fixed wireline market in 2003, the distinction of fixed wireline and fixed wireless networks is, to an extent, redundant.

More specifically, regulators and government may have to consider whether allowing the introduction of new technology may inflict any negative economic effect on certain players in the telecom market. For example, unlike Hong Kong, the Indian government was hesitant in clarifying the legality of VoIP under its existing legislation in 1999 thus permitting private parties to adopt VoIP technology, as it was concerned that this may lead to a substantial loss of revenue to the Department of Telecommunications which had invested heavily in establishing a voice network and intended to recoup the investment by charging a special rate on international calls.

Similarly, the PRC Government appears to be holding off on the formulation of any third generation mobile licensing policy by delaying field trials for the various third generation mobile standards to ensure that existing second generation mobile operators, such as China Mobile and China Unicom, will be able to recoup their investments in second generation networks.

Other factors which regulators and governments may take into account include:

- whether the use of such new technology requires the utilisation of any scarce resources, such as frequency spectrum, if so, it is more likely that such technology will be subject to regulatory control;
- the impact of the adoption of such technologies on related sectors - for example, in the PRC, the Government appears to be delaying the introduction of third generation mobile technology partly because it is awaiting the development of homegrown third generation mobile handsets and partly to allow more time for the development of its homegrown TDS-CDMA 3G technology; and
- where a new technology is capable of being utilised to provide different services, regulators and governments may restrict the application of such technology to certain services for economic (the level of competition which such technology may bring about to the relevant service market) and political considerations (for example a service should remain closed to private companies); in this regard, such technology is likely to be subject to regulatory control, at least, for the purpose of restricting its application to designated services.

Even if regulators and governments determine that certain new technologies are required to be regulated, they may be subject to different level of regulatory control. For example, in Hong Kong, Wi-Fi is subject to minimum regulatory control. A class licence has been introduced to regulate the provision of services using the Wi-Fi technology and the main concern the regulator has relates principally to the use of frequency spectrum. On the other hand, mobile services using the third generation mobile technology have been subject to a high degree of regulatory control as the Hong Kong Government is concerned not only over the use of frequency spectrum but also the setting up of a suitable regulatory framework for MVNO operators which intend to provide mobile services using the third generation mobile technology.

5. CONCLUSION

Whether regulations anticipate technology developments (i.e. are technology neutral) depends on a number of factors other than the regulations themselves. For example: if a market has not been liberalised, or is only in the early stages of liberalisation, there is likely to be less need for detailed or sophisticated regulation. If for political reasons, foreign investment is subject to restrictions, innovation in technology may not be feasible.

In poorer developing countries where the emphasis will be on providing affordable basic telecommunications services, it is more attractive to leave open the issue of the kind of technology to be used to the service providers and to adopt a technology-neutral approach to regulations. Similarly, for most Pacific Island Nations, which possess distinctive sets of geographical and demographical features, notably the spread of a small population over a vast geographical area, if formal ICT policies and regulations are to be adopted, they are likely to be technology-neutral. It is, for example, more cost-

effective to provide basic telecommunications services in these countries using wireless technology than the traditional wireline technology.

In more "controlled" economies, where the political system is more authoritarian, the regulatory system may be prohibitive rather than permissive, resulting in a careful step by step approach to technological development.

In addition, in formulating any policies, including policies on ICT, a government often needs to take account of other political and/or socio-economic considerations. For example, given the population of China, decisions on which 3G standard to adopt could have a major impact on (i) the 3G market globally and (ii) the domestic market, particularly on the equipment (network and handset) side.

Perhaps, one of the major impacts of the development in ICT technologies, in particular, the convergence technology, is the breaking down of the barriers between sectors which previously were subject to separate regulatory regimes. This in turn leads to the convergence of policy-makers, regulators and legislation.

* Michelle would like to thank Alison Lindsay and Yvonne Chui for their assistance in the preparation of this paper.

ENDNOTES

¹ It has long been recognised by economists that "suboptimal" performance in telecommunications often leads to serious economic consequences and this is particularly true when it comes to low- and middle-income countries, such as, Indonesia, Vietnam and Laos. For more discussion on this, see Peter L. Smith and Gregory Staple, "*Telecommunications Sector Reform in Asia - Toward a New Pragmatism*", World Bank Discussion Paper No. 232, 1994.

² See the keynote address given by Mr Yoshihiro Iwasaki, Director, Programs Department (West) at the Regional Roundtable on Information and Communication Technology held in Bangalore, 28-30 August 2001. The advent of new technologies also means that indicators and benchmarks (e.g. fixed lines and mobile penetration rates) used in the past to measure the performance of a country in telecommunications may need to be revamped. In the Asia-Pacific Forum on Telecommunications Policy and Regulation held in Kuala Lumpur, Malaysia from 16 to 18 May 2002, this particular issue was discussed in one of the sessions entitled "*Panel Discussion on New Performance Indicators - Catching Up With Technology*".

³ See P. Smith and G. Staple, "*Telecommunications Sector Reform in Asia*", op. cit., p. 23 to 42.

⁴ Office of the Telecommunications, "*A brief history of recent UK telecoms and OfTel*", at p. 2.

-
- ⁵ An estimate made in July 2003. Central Intelligence Agency, "The World Factbook: Nauru", (<http://www.cia.gov/cia/publications/factbook/geos/nr.html>).
- ⁶ The PRC Telecommunications Law is still in the drafting stage and it is uncertain when it will be released.
- ⁷ The legislation which establishes the charter of Palau National Communications Corporation does set forth its operating parameters and operating conditions.
- ⁸ Yow Lock Sen, "*Industry Performance After Convergence*", ITU paper, ITU Telecom Asia 2002, p. 1.
- ⁹ For Hong Kong, see, for example, the policy statement issued by the former Information Technology and Broadcasting Bureau (now known as the Communications and Technology Branch of the Commerce, Industry and Technology Bureau) of the Government Secretariat of Hong Kong, "*Legislative Council Brief - 1998 Review of Fixed Telecommunications*", 3 September 1998, p. 2. For Singapore, see, for example, the press statement issued by Yeo Cheow Tong, Minister for Communications & Information Technology, "*Bringing Forward Full Competition in the Telecommunication Sector*", 21 January 2000.
- ¹⁰ Ministry of Mass Communication, Sri Lanka, "*Proposed National Communications Policy*", September 2002, p. 4.
- ¹¹ Ibid, p. 13 to p. 19.
- ¹² The Pacific Islands Regional ICT Consultation, which was held at Suva, Fiji, on 9-11 April 2003.
- ¹³ Fiji's Ministry of Communications, "*Pacific Islands Regional ICT Consultation - Country Report Fiji*", 9-11 April 2003.
- ¹⁴ Postal and Telecommunications Services Act, Section 6.
- ¹⁵ Oftel, "*A brief history of recent UK telecoms and Oftel*", op. cit., at page 2.
- ¹⁶ Insofar as international telecom services were concerned, following the conclusion of the Framework Agreement with Hong Kong Telecom International Limited ("HKTI") by the Hong Kong Government which ended HKTI's exclusive rights to provide international facilities and international voice service, the Hong Kong Government introduced competition to the international telecommunications markets in phases. For details, see Information Technology and Broadcasting Bureau, Government Secretariat, "*Legislative Council Brief - 1998 Review of Fixed Telecommunications -*

Moratorium on the Issue of Further Local Fixed Telecommunications Network Services Licences and Licensing of Additional External Facilities-Based Operators", 5 May 1999.

- ¹⁷ Notable exceptions include Japan, Australia, New Zealand and Hong Kong.
- ¹⁸ This is a definition used in a recent presentation entitled "*Convergence: Policy and Regulatory Issues*" given by Sameer Sharma, Advisor, Malaysian Communications and Multimedia Communications, Malaysia in July 2003 in Jonhhasbug, South Africa.
- ¹⁹ Notwithstanding that there is no restriction on the use of VoIP, it was only recently that the technology was taken up by domestic wireline telecommunications operators in Hong Kong to provide voice service as demonstrated by (i) Hong Kong Cable Television Limited, a cable broadcaster in Hong Kong, putting on trial such service, which trial ended in June 2003, and (ii) the offering of VoIP services by PCCW-HKT Telephone Limited, the incumbent in Hong Kong, from November 2003 and Wharf T&T Limited, from July 2003.
- ²⁰ It should be noted however that if an ISP wishes to provide real-time voice service, it needs to apply for a public non-exclusive telecommunications services licence ("PNETS licence") for external telecommunications services ("ETS"), not the PNETS licence for international value-added network services ("IVANS"), which expressly prohibits the provision of real-time voice service. The PNETS licence for IVANS was invented prior to the liberalisation of international services which was then provided on an exclusive basis by Hong Kong Telecom International Limited (now known as Reach). The prohibition in Hong Kong therefore was not a prohibition on the use of technology but rather the type of services an ISP may provide, which indirectly restricted the deployment of the VoIP technology.
- ²¹ The restructuring of China's telecommunications market over the last five or six years has seen the creation of four major operators, two of which, China Telecom and China Netcom, have licences to operate fixed networks, and two of which, China Mobile and China Unicom, dominate the mobile sector.
- ²² For a brief discussion on this, see the presentation given by Jong-hyuk Ro, Ministry of Information and Communication, Republic of Korea entitled "*Integrated Wireline and Wireless Services: A Policy Direction*" at the Asia Pacific Forum on Telecommunication Policy & Regulation held in Kuala Lumpur, 16-18 May 2002.
- ²³ The Hong Kong Government's decision that the incumbent did not require a separate television licence to deploy the VOD technology to provide television service in 1994 resulted in Wharf Cable Limited, a cable television operator which had been promised a three year moratorium in 1993 on the issuance of further television licence,

challenging the government's decision in court. See *Wharf Cable Limited v. AG and Hong Kong Telephone Company Limited* [1996] 1 HKLR 156.

²⁴ These include the Independent Television Commission, the Broadcasting Standards Committee, the Office of Telecommunications, the Radio Authority and the Radiocommunications Agency.

²⁵ It has been pointed out, for example, that with advance in technology, it may no longer be necessary to regulate owners of any "bottleneck or essential facilities" as they are currently regulated under most telecommunications regulatory regime because the multiple access options available to service providers largely make this concept redundant. See the presentation given by Mr Leong Keng Thai, IDA, Singapore, entitled "*Regulatory Issues in the Era of Convergence*" in the Asia-Pacific Telecommunity, Asia-Pacific Forum on Telecommunications Policy and Regulation, held on 16 - 18 May, 2002 in Kuala Lumpur, Malaysia.

²⁶ See Ministry of Mass Communication, "Proposed National Communications Policy", September 2002.

²⁷ "*Pacific ICT Capacity and Prospects*", Working Paper, Pacific Islands Forum Secretariat, 2002, p. 9 to p.11.

²⁸ "*Pacific Islands Regional ICT Consultation - Report of e-Pacifik*", 2003, p. 26.

²⁹ Palau National Communications Corporation, "*Telecommunications Development in Palau*".