

**ITU Report on
Enabling Frameworks for ICT Development in
CLMV Countries – Moving Forward**

**Subregional Telecommunication Ministerial Forum for Cambodia, Lao
PDR, Myanmar and Viet Nam (CLMV)**

**11 – 12 December 2009
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1. Introduction

In recent years, the Cambodia, Lao PDR, Myanmar and Viet Nam (CLMV) sub-region, taken as a whole, has experienced a remarkable acceleration in the adoption of ICT services. Mobile telephone services in particular have shown spectacular growth with a majority of countries in the sub-region demonstrating take-up rates that far surpass the global average. Internet penetration in the sub-region as a whole has also been rising, albeit at a much slower rate.

While growth in ICT adoption in the region as a whole is predicted to continue, international comparisons of the existing state of development suggest that the region faces a tremendous opportunity to grow further. Benefiting from this opportunity will depend upon several factors that are essential to fostering an environment that is conducive to ICT development.

The success of such an effort will depend largely on policies, laws and regulations applicable to the ICT sector. These elements act as an enabling framework within which competition and market forces can be harnessed for national benefit. The policy, legal and regulatory environment sets the conditions which investors consider when choosing to invest capital in ICT in this sub-region as opposed to other opportunities available to them worldwide. These conditions also determine whether service providers will compete with one another effectively to bring significant improvements for the population and businesses in pricing, variety and quality of services.

Before embarking on a discussion of potential approaches to ensuring an enabling environment for the CLMV sub-region, it should be born in mind that significant differences exist between the countries that make up the sub-region. As will be seen in the report, Cambodia, Lao PDR, Myanmar and Viet Nam have each taken their own approaches to ICT development. Disparities between approaches – and results – have to be taken into account when assessing the sub-region's progress and when suggesting measures for possible improvement. While this report reviews the sub-region as a whole, it also reviews each country and offers insights on the various possibilities available to them as they consider what direction to take their ICT sectors.

1.1. Background to the report

This report has been prepared as an input to the Subregional Telecommunication Ministerial Forum for Cambodia, Lao PDR, Myanmar and Viet Nam (CLMV). The Forum will be held in Nha Trang, Viet Nam from 11-12 December 2009 and is hosted by the Ministry of Information and Communications, Socialist Republic of Viet Nam.

As a basis for the report, an extensive questionnaire on the policy, legal and regulatory framework of each CLMV country was prepared and circulated to their respective focal points for response.

1.2. Report overview

This report concentrates on the creation of an enabling environment in the form of an effective policy, legal and regulatory framework as the foundation of a successful national ICT development effort.

To provide context to the discussion of the enabling environment, section 2 of this report provides an overview of the current state of ICT development in the CLMV sub-region, briefly reviewing the status of ICT infrastructure and the ICT market.

Section 3 of this report focuses on policy, legal and regulatory frameworks. It begins by discussing the importance to sector performance of establishing effective policy, legal and regulatory frameworks for ICT development in the region. It then provides an overview of the current frameworks of the CLMV countries, making broad observations about the opportunities that the CLMV countries enjoy to develop these further, as well as some challenges that market developments pose to their existing frameworks.

Section 4 goes on to review various measures based on international best practices that the CLMV countries might consider if seeking to improve their existing policy, legal and regulatory frameworks to develop an enabling environment for ICT. Based on these, the section concludes with various recommendations as to how CLMV as a group could support the realization of such improvements.

2. Overview of developments in the region

The CLMV sub-region, over the past several years, has experienced significant and rapid ICT growth. This has been reflected both in the brisk adoption of ICT services by the population, the rapid expansion of infrastructure and significant increases in the size of their ICT markets.

2.1. ICT Indicators

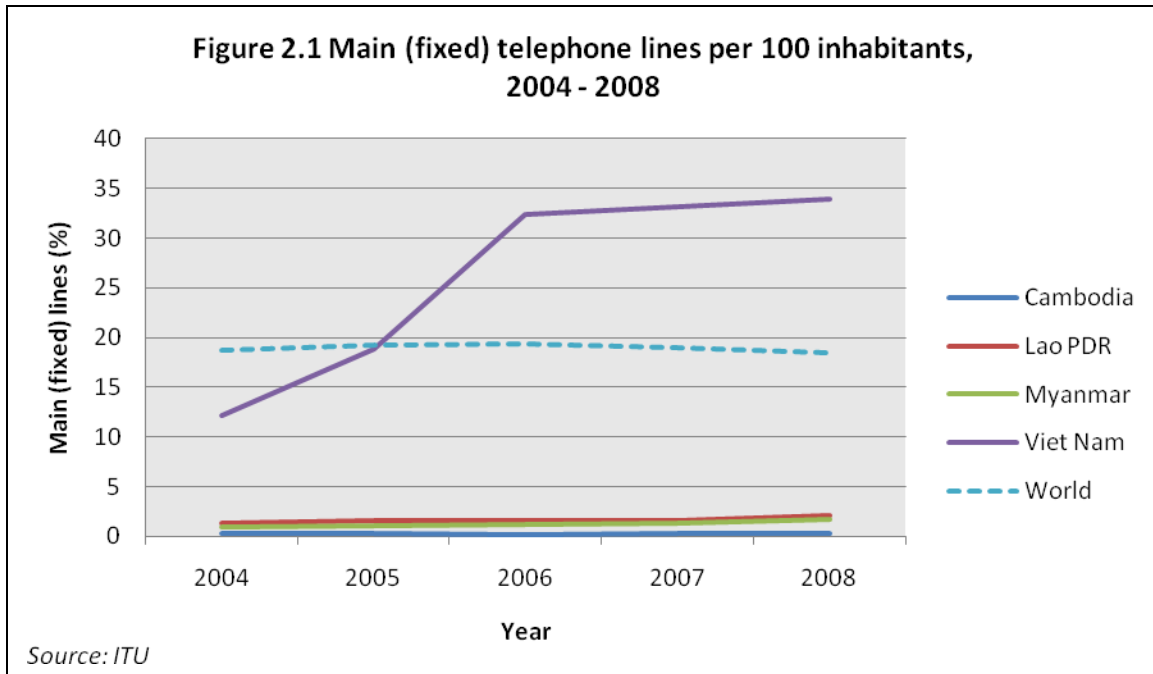
Key ICT indicators measured by the ITU have demonstrated some major growth in the CLMV countries over the last six years. For the large part, this is illustrated by the considerable increase in the availability of voice services in these countries. Over the sub-region as a whole, access to main (fixed) telephone lines and mobile cellular subscriptions has developed considerably. In these two key areas, the average Compound Annual Growth Rates (CAGR) for the sub-region have far surpassed the global average in the same period. From 2003 to 2008, mobile cellular subscriptions rose at an astounding average CAGR of 85 per cent in the CLMV sub-region. The global average was just 23 per cent. During the same period, the total number of fixed (main) telephone lines in the CLMV sub-region experienced an average CAGR of more than 40 per cent, compared to the global average of just 2 per cent. Although this growth was almost entirely driven by Viet Nam, it demonstrates the potential the sub-region has for major investment in critical ICT infrastructure.

2.1.1. ICT penetration

Despite the high growth rates experienced by the CLMV sub-region as a whole over the past few years, penetration rates in general remain low in comparison with global averages.

2.1.1.1. Fixed line

While Viet Nam has experienced significant growth, fixed telephone line penetration rates in Cambodia, Lao PDR and Myanmar remain extremely low, and have not grown significantly over the past five years (see Figure 2.1).



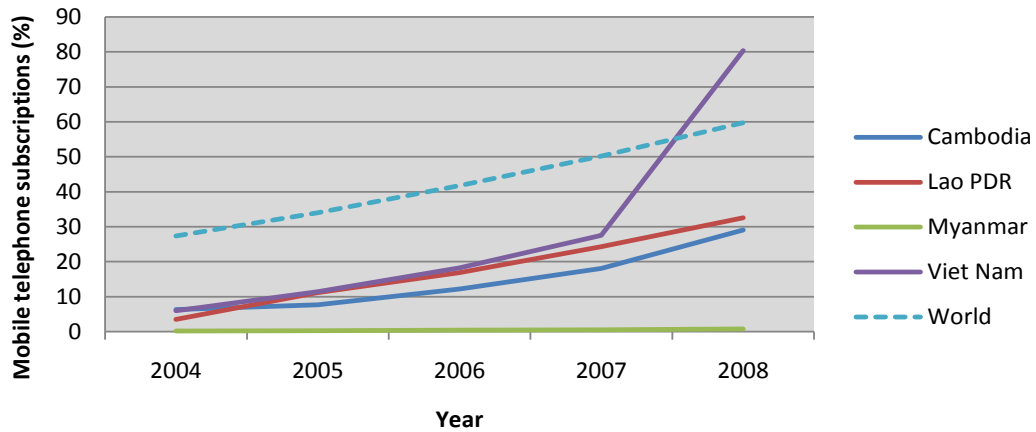
Although global growth in fixed lines has also leveled off during the same period, the lack of fixed line growth at such a low penetration level inhibits the broader development of the ICT sector, particularly the take-up of Internet services. While voice services can be provided adequately over mobile telephone networks, Internet access in the region is still, to a large extent, dependant on the availability of a fixed line connection as the predominant means of accessing the Internet is still dial-up over a fixed line. And notwithstanding increasing availability of wireless Internet access technologies, fixed lines are in any country a crucial component of broadband policy given the potential bandwidth they can provide, particularly for businesses and other high user customers.

2.1.1.2. Mobile

With the exception of Myanmar, mobile services clearly dominate the overall telecommunications market in the CLMV region with consistent year-on-year growth in the number of subscriptions. With the exception of Viet Nam, however, penetration levels still remain relatively low in comparison with global averages, thus leaving significant room for growth (see Figure 2.2).

Figure 2.2 Mobile telephone subscriptions per 100 inhabitants,

2004 - 2008

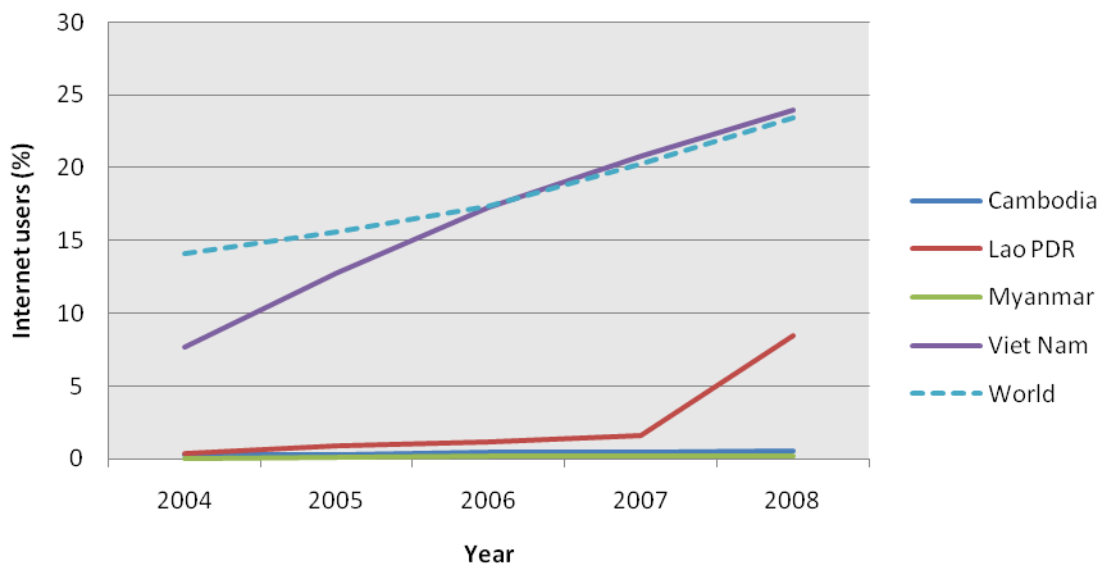


Source: ITU

2.1.1.3. Internet

As a whole, the Internet penetration level in terms of users in the sub-region remains comparatively low despite the growth in the number of users seen in Lao PDR and Viet Nam in recent years (see Figure 2.3).

Figure 2.3 Internet users per 100 inhabitants (est.), 2004 - 2008



Source: ITU

To a large extent, Internet usage penetration is restrained by a combination of factors that include the lack of access to appropriate infrastructure (telecommunications and electricity), the limited availability of PCs, the lack of appropriate skills and training, and the problem of affordability in general.

Currently, broadband services are provided in all the CLMV countries over a range of platforms (e.g. DSL, WiFi, WiMAX, satellite). However, despite the presence of some of the latest technologies, broadband penetration numbers remain extremely low in all four countries (see Table 2.1).

Table 2.1 Broadband subscribers and broadband subscribers per 100 inhabitants, 2008

	Cambodia	Lao PDR	Myanmar	Viet Nam
No. of broadband subscribers	16,600	6,100	10,100	2,049,000
Broadband subscribers per 100 inhabitants (%)	0.11	0.10	0.02	2.35

Source: ITU World Telecommunication / ICT Indicators Database 2009

2.2. Infrastructure overview

Over the last several years, the CLMV sub-region has also experienced an exponential growth in connectivity on the international, regional and national levels.

2.2.1. International connectivity

On an international level, for example, the average CAGR of international Internet bandwidth between 2002 and 2007 in the CLMV sub-region has been pegged at more than 87 per cent. This figure is comparable with that of the fast growing countries of the Asia - Pacific region which over the same period achieved an average CAGR of 70 per cent.

This growth has been supported by the region's connectivity with major undersea cables such as SEA-ME-WE 3, with a landing point in Myanmar, and T-V-H, with a landing point in Viet Nam. More recently, connections to the TGN-IntraAsia Submarine Cable (IASC) System, a 6,800km cable connecting Singapore, the Philippines, Hong Kong, China and Japan, and the Asia-America Gateway (AAG), a new 20,000km long cable system that connects North America and Asia, were launched in November 2009. With landing points in Viet Nam, the IASC's link is expected to provide an initial capacity of 320Gbps while AAG's Viet Nam link is expected to provide the country with an initial capacity of 240Gbps. Cambodia is also expected to be connected directly with the AAG cable system in the near future. Table 2.2 provides a brief overview of the each country's level of international ICT connectivity.

International bandwidth serving the region is also expected to increase further with the formation of a new consortium for the construction of a new regional undersea cable system dubbed the Asia Pacific Gateway (APG) in May 2009. The new 8,000km cable will connect Taiwan, China, South Korea, Japan, Hong Kong, China, Philippines, Viet Nam, Thailand, Malaysia and Singapore. The APG will have a minimum design capacity of four terabits per second and is expected to be ready for service in 2011.

It is also worthwhile to note that Viet Nam’s first communications satellite, Vinasat was launched in April 2008. It provides broadcast and telecommunications services (video, data, voice) to the Asia-Pacific region.

Table 2.2: International Internet Bandwidth, 2008

	Cambodia	Lao PDR	Myanmar	Viet Nam
Terrestrial Capacity/ Bandwidth	800Mbps	-- *	310Mbps	--*
Satellite Capacity/ Bandwidth	150Mbps	--*	820Mbps	--*
Total Capacity/ Bandwidth	950Mbps	455 Mbps	1130Mbps	64,630Mbps
Percentage of capacity used	85%	100%	66%	--*
No. of international gateways	4	3	1	--*

Note: -- information unavailable*
Source: Questionnaire to the report

2.2.2. Regional and national connectivity

On a regional level, Internet connectivity between the four CLMV countries has also been boosted by the development of more cross border links. In particular, the Greater Mekong Subregion Information Superhighway Network (GMS-ISN) Project has played a key role in dramatically increasing connectivity between the countries of the Greater Mekong Subregion (which, in addition to the CLMV countries, includes China and Thailand). Following Memorandums of Understanding (MoUs) signed between the governments of the six countries in December 2004 and July 2005, the project is currently being carried out in multiple phases. In the phase between 2005 and 2008, the six GMS countries constructed a point-to-point optical transmission system between their countries. When system demand reaches a certain level, the countries will construct ring networks that will provide more transmission capacity in the next phase which is scheduled for the present 2009-2010 period. The final phase envisages the development of services and applications that will take advantage of the increased connectivity. These include the development of online public services such as health and education. Phase one of the project is largely complete with high-speed cross border links established between the six countries. For example, as part of the GMS-ISN, Viet Nam has established two 2.5 Gbps high speed connections with Lao PDR, one connection with Cambodia at 2.5 Gbps (with another connection in the process of being constructed), and a 10 Gbps connection with China.

On a national level, infrastructure deployment has also been improved significantly. Backbone infrastructure, in particular, has been boosted by the GMS-ISN initiative described above. Table 2.3 below provides a snapshot of the current national backbone ICT infrastructure in place in the four countries.

Table 2.3: National ICT Backbone Network, 2008

	Cambodia	Lao PDR	Myanmar	Viet Nam
Technology used	Fiber-optic Microwave Satellite	Fiber-optic Microwave Satellite	Fiber-optic Microwave Satellite	Fiber-optic Microwave Satellite
Capacity/ Bandwidth	12.5Gbps	10Gbps	10Gbps	240Gbps
Distance covered	15,800km	9,449km	19,675km	--*

Note: --* information unavailable

Source: Questionnaire to the report

As discussed in the preceding section, fixed line access on a local level in the region remains limited. Despite the growth in international and national backbone connectivity, access to local fixed line infrastructure remains primarily confined to large urban centers in the four countries. As a result, local access to ICT infrastructure is largely provided through the mobile telephone networks. Table 2.4 summarizes the extent of mobile coverage in each country.

Table 2.4: Mobile Network Coverage (percentage of population), 2007

Cambodia	Lao PDR	Myanmar	Viet Nam
87	55	--*	70

Note: --* information unavailable

Source: Source: ITU World Telecommunication / ICT Indicators Database 2009

2.3. Market overview

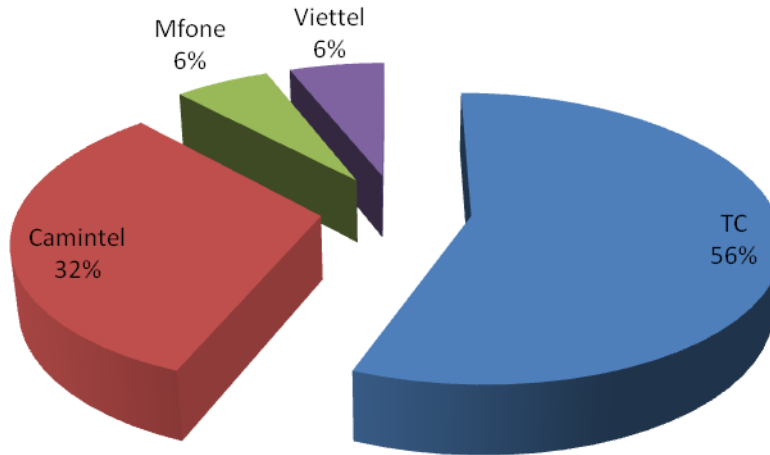
Market developments in most of the CLMV countries have been characterized by new market entry, the presence of multiple service providers in a majority of markets and an increase in the inflow of investment into the ICT sector.

Cambodia

In recent years, competition has increased in the Cambodian ICT market as a result of the liberalization of market entry in the provision of all telecommunications services.

Currently, four operators offer fixed voice services: the incumbent Telecom Cambodia (TC) which was corporatized in 2006; Camintel, a joint venture involving the Ministry for Posts and Telecommunications (MPTC) which entered the market in 1995; Mfone, a wholly owned subsidiary of Thaicom which entered the market in 1997; and Viettel (Cambodia), a subsidiary of Viettel (Viet Nam). Their respective market shares are illustrated in Figure 2.4 below. The incumbent TC retains the largest market share in the fixed line segment despite the long term presence of competitors in the market.

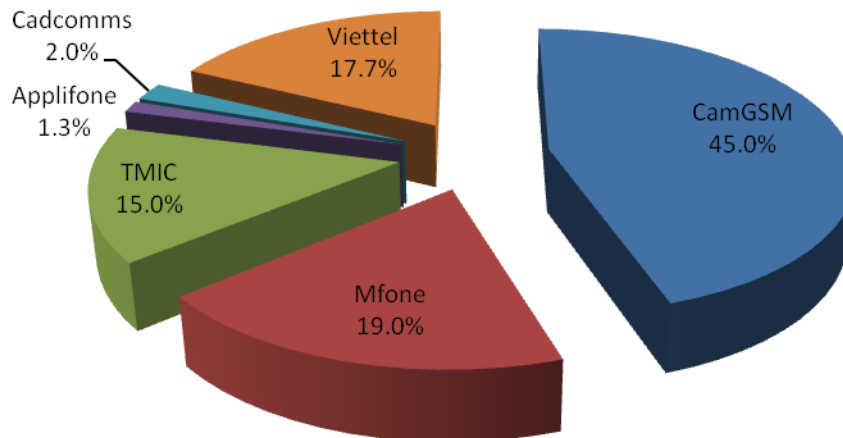
Figure 2.4 Market shares (subscribers) of fixed telephone service providers, Cambodia, 2009



Source: Questionnaire to the report

In the area of mobile services, Cambodia has a total of nine operators. With nine mobile operators, the country's GSM frequencies of 900 MHz and 1800MHz are full, preventing the further entry of mobile network operators unless network capacity is expanded. The market shares of the six major operators are illustrated in Figure 2.5 below.

Figure 2.5 Market shares (subscribers) of mobile telephone service providers, Cambodia, 2009



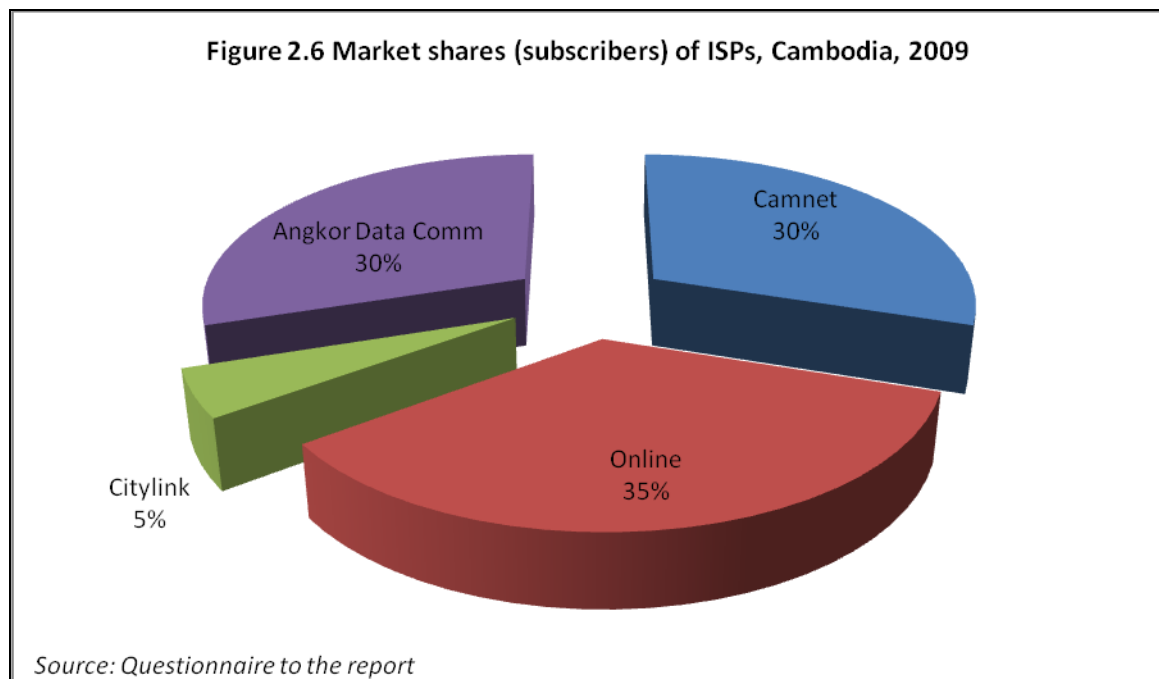
Source: Questionnaire to the report

The incumbent CamGSM (Mobitel), currently fully owned by the Royal Group, remains the operator with the largest market share despite the high level of competition.

The presence of nine mobile operators in Cambodia is thought to have significant implications for the development of the sector. Firstly, mobile subscriber growth appears to be accelerating as the level of competition increases. For example, between 2002 and 2007, the number of mobile subscribers grew at a CAGR of 46.7 per cent. Secondly, coverage is expected to expand as operators search for new subscribers beyond urban areas. Finally, the introduction of new technologies has accelerated with operators attempting to gain market share by differentiating their offers, for example by providing new services such as mobile Internet access. For example, Cadcomm (qb) introduced 3G services in March 2008.

As might be expected, the presence of the large number of competitors in the mobile market has led to some disputes over pricing and interconnection. This has in turn led to the intervention of the regulator. The large number of mobile operators has also led to concerns regarding ongoing profitability and predictions of eventual market consolidation.

In the area of Internet service provision, Cambodia has more than 15 ISPs. The market, however, is largely shared by three operators: Camnet which is linked to MPTC and was the first ISP in the country; Online which was established by the Australian incumbent Telstra in 1997; and Angkor Data Communications. Their estimated market shares are illustrated in Figure 2.6 below.



Internet access through a full range of technologies is available through the different ISPs in the Cambodian market where connectivity allows:

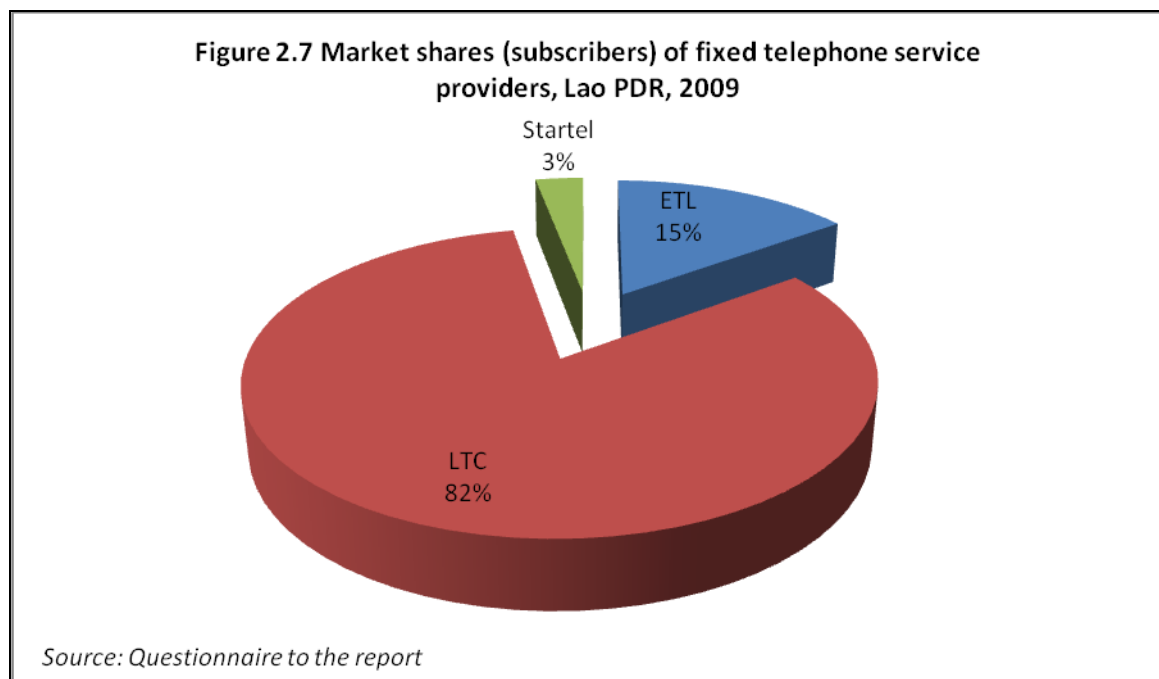
- DSL : 64Kbps upto 4Mbps
- WiMAX : 64Kbps upto 4Mbps
- WiFi : 64Kbps upto 10Mbps
- Fiber : up to 10Mbps
- Satellite : up to 2Mbps

A subscription for an ADSL 128 kbps downlink connection costs around USD 29 per month.

Lao PDR

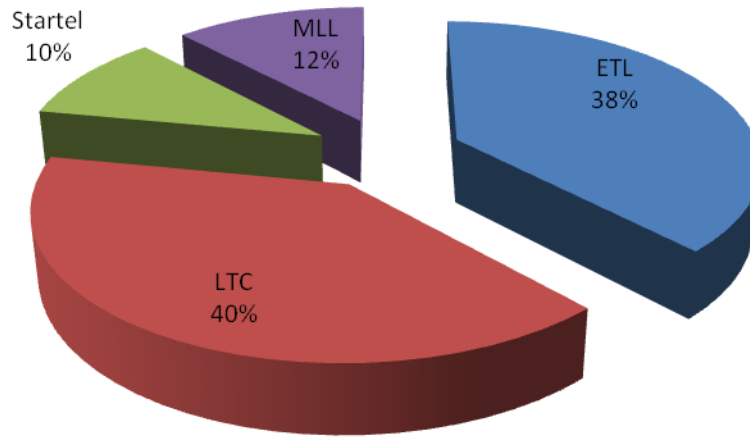
Lao PRD has made a number of gradual changes to the structure of its telecommunication sector over the last decade. Until 1993, the Enterprise of Post and Telecommunications Lao (EPTL) was the state-owned organisation responsible for operating telecommunications in the country. Liberalisation started in 1994, when a first joint venture was established between the Government of Lao and Shinawatra International Public Company Limited to form Lao Shinawatra Telecom Company Ltd (LST). Postal services were separated from telecommunications in 1995, when EPTL was divided into Enterprise of Post Lao (EPL), and Enterprise of Telecommunication Lao (ETL). In 1996, ETL and LST were merged to form Lao Telecommunications Company Limited (LTC). The telecom sector was open to competition in November 2001.

The fixed line market is currently shared by three operators: LTC, ETL (which was reconstituted in 2000) and Star Telecom (a joint venture between Viettel and Lao Asia Telecom, a state-owned operator) which entered the market in 2008. Figure 2.7 illustrates the relative market shares of the operators in the fixed-line segment. The incumbent LTC retains a large share of the fixed line market.



The three operators in the fixed market are also present in the mobile market, joined by mobile operator Millicom Lao (MLL), a joint venture between VimpelCom and the Government. Figure 2.8 illustrates the shares of the operators in the mobile market. Competitive forces appear to be stronger in the mobile market with the incumbent LTC progressively losing market share to the newer market entrants.

Figure 2.8 Market shares (subscribers) of mobile telephone service providers, Lao PDR, 2009



Source: Questionnaire to the report

In October 2008, LTC launched the nation’s first commercial 3G service in the capital Vientiane. It is currently expanding its service to other regions.

Currently, there are eight ISPs licensed to provide Internet services in Lao PDR. Internet access is provided over a range of technologies that include DSL, WiFi and WiMAX.

Subscription costs are relatively high for broadband services with a monthly subscription to an ADSL plan at 128kbps costing approximately USD 135.

Myanmar

Currently, the Myanmar Posts and Telecommunications (MPT) Department of the Ministry of Communications, Posts and Telegraphs (MCPT) is the sole provider of fixed line and mobile telecommunications in Myanmar. It utilizes both CDMA and GSM standards in its provision of mobile services. Testing on the deployment of 3G services commenced in 2008 with 3G services having been deployed in Yangon in early 2009.

In the area of Internet service provision, MPT faces competition from another government-owned entity Myanmar Teleport (or Yatanapon Teleport, formerly known as Bagan Cyber Tech) which entered the market in 2002. Currently, MPT has a 60 per cent share of the market while Myanmar Teleport has a share of 40 per cent.

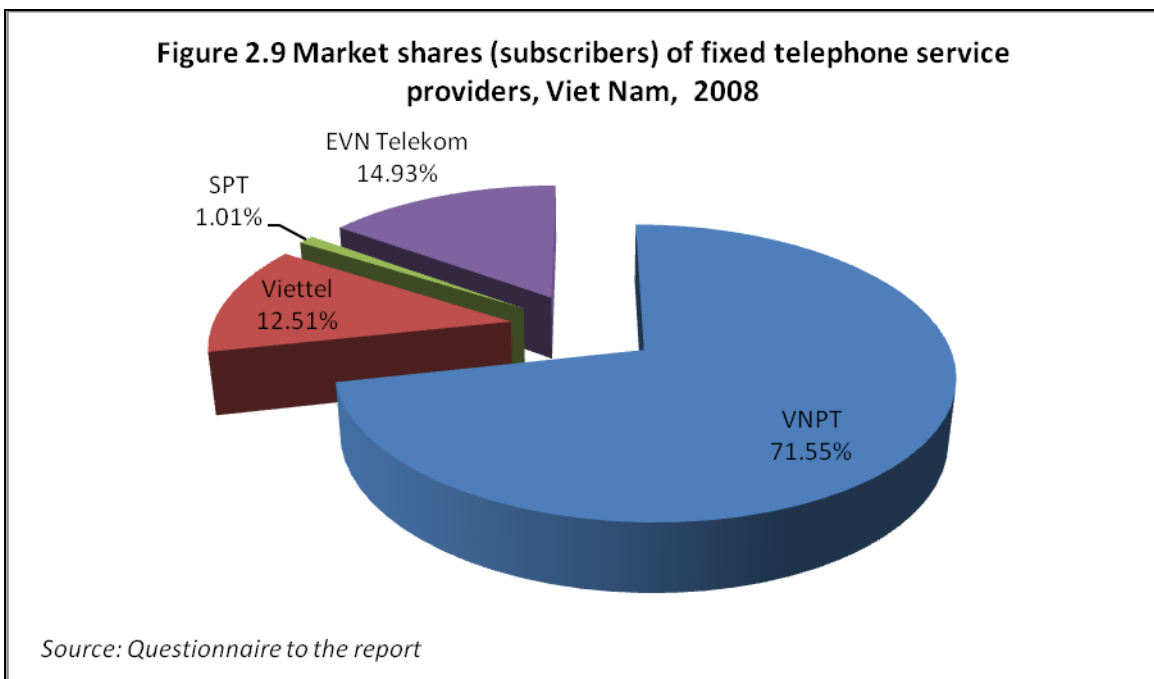
Internet access over DSL, fiber and satellite are offered by the two ISPs while Red Link, an ISP that offers services in collaboration with Myanmar Teleport, provides WiMAX and Wi-Fi based services in the former capital of Yangon.

A subscription to an ADSL 128 kbps downlink plan costs approximately USD 35 per month.

Viet Nam

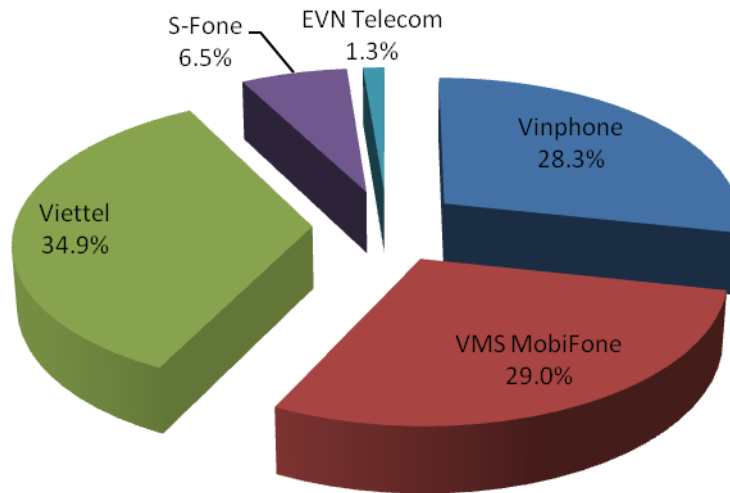
Viet Nam started liberalizing telecommunications in 1993 when it separated its operational functions from the Directorate General of Posts and Telecommunications (DGPT). Saigon Postel then entered the market in 1996, followed by Viettel in 2000.

Although there are currently 8 fixed telephone service operators in Viet Nam, the market is clearly led by the top four operators: Viet Nam Post and Telecommunications Corporation (VNPT) which is the incumbent state-owned enterprise; Viettel an enterprise under the Ministry of Defence; EVN Telekom which is wholly owned by the state-run Electricity of Viet Nam Group; and Saigon Postel Telecommunication Company (SPT), which has a diverse shareholder base including VNPT. Their market shares are illustrated in Figure 2.9 below. Despite the early entry of competition into the market, VNPT continues to retain a significant share of the fixed line market.



The mobile phone service market in Viet Nam is currently divided among seven mobile network operators, and one mobile virtual network operator (MVNO). The market is dominated by the top three operators: Vinaphone and VMS Mobifone, both joint-ventures involving VNPT; and Viettel Mobile. The market shares of the mobile service providers are illustrated in Figure 2.10 below. The three established operators have a roughly equal share of the market.

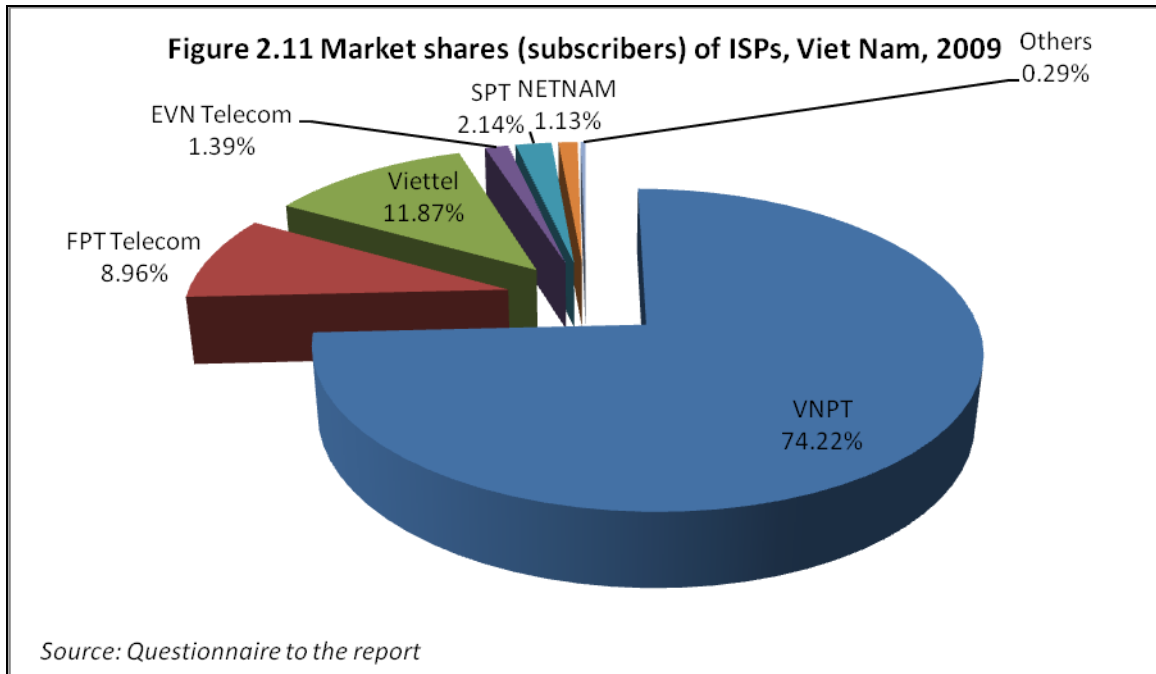
Figure 2.10 Market shares (subscribers) of mobile telephone services providers, Viet Nam, 2008



Source: Questionnaire to the report

In October 2009, Vinaphone launched third generation services in the country's largest cities in October 2009, becoming Viet Nam's first 3G provider. Vinaphone was awarded its license to operate 3G services by the Ministry of Information and Communication (MIC) in April 2009, along with Viettel, MobiFone and a consortium of EVN Telecom and Hanoi Telecom.

As of August 2009, there were 66 licensed ISPs. This liberalized environment contributed to an increase in the pool of Internet users in the country which, from 2002 to 2007, grew at a CAGR of 64.1 per cent, the fastest in the sub-region. The largest ISPs in 2009 were VNPT, Viettel, FPT Telecom, EVN Telecom and Saigon Postel. Their market share is illustrated in Figure 2.11 below. VNPT, as the incumbent, enjoys a large share of the market despite the number of competitors present.



ISPs offer a range of technologies for the delivery of their services: DSL, cable TV, fiber and WiFi. Four operators FPT Telecom, EVN Telecom, Viettel and VNPT have been granted licenses to test mobile WiMAX.

The cost of subscribing to broadband services is relatively low compared with other countries in the region. A subscription to a 1Mbps ADSL downlink connection, one of the slowest bandwidth plans on offer, costs around USD 20 per month. As a result, Viet Nam enjoys the highest broadband penetration rate in the sub-region.

2.4.Pricing and affordability

The pricing and affordability of ICT services is a key factor that affects the take-up and adoption of ICT services. While ICT service pricing in most of the CLMV countries may not be significantly out of line with prices charged in other countries, their subjective affordability in light of income levels in the respective countries indicates that they are relatively expensive.

The ITU developed and released the ICT Price Basket in March 2009 in order to raise awareness of the impact of ICT prices on ICT usage and to allow policy makers to evaluate the cost of ICTs in their national markets compared to those of other countries.¹ In the ICT Price Basket for Asia and Pacific, Cambodia, Lao PDR and Viet Nam ranked low on the scale for affordability of ICT services (see Figure 2.12). The low GNI per capita of Cambodia and Lao PDR is likely a major reason for their lower rankings, as well as the significantly higher cost of fixed broadband

¹ The ICT Price Basket is made up of three sub-baskets, which measure the prices of fixed telephone, mobile cellular and fixed broadband Internet services. Each sub-basket is presented in US\$10, in PPP\$, and as a percentage of monthly GNI per capita. Prices of each sub-basket are expressed as a percentage of GNI per capita, thus pointing to the relative cost (or affordability) of ICT services within a country.

connections as a percentage of GNI per capita. Still, further reform in policy, legislation and regulation could be expected to bring significant improvement in prices (as well as quality and variety of services), as discussed in the remainder of this report.

Figure 2.12 ICT Price Basket 2008, Asia and the Pacific

Rank	Economy	ICT Price Basket Value**	Sub-baskets			GNI per capita*, USD
			Fixed (% of GNI per capita*)	Mobile (% of GNI per capita*)	Broadband (% of GNI per capita*)	
1	Singapore	0.4	0.3	0.1	0.8	32'470
2	Hong Kong, China	0.5	0.4	0.1	1.0	31'610
3	Macao, China	0.6	0.8	0.2	0.9	14'020
4	Korea (Rep.)	0.8	0.4	0.9	1.2	19'690
5	Japan	0.9	0.6	1.0	1.0	37'670
6	Australia	0.9	0.9	0.9	0.9	35'960
7	New Zealand	1.2	1.4	1.0	1.3	28'780
8	Malaysia	1.9	0.9	1.1	3.8	6'540
9	Maldives	2.1	1.5	1.3	3.5	3'200
10	Thailand	3.3	2.0	1.4	6.3	3'400
11	China	4.4	1.9	1.8	9.4	2'360
12	India	4.7	4.4	2.1	7.7	950
13	Fiji	5.2	3.1	4.4	8.2	3'800
14	Iran (I.R.)	5.4	0.1	1.3	14.9	3'470
15	Sri Lanka	7.3	3.7	1.9	16.3	1'540
16	Indonesia	7.6	3.3	3.9	15.8	1'650
17	Micronesia	8.6	3.9	2.4	19.4	2'470
18	Philippines	10.7	10.5	4.2	17.3	1'620
19	Pakistan	11.0	5.0	2.7	25.5	870
20	Viet Nam	11.9	3.5	6.4	25.8	790
21	Bhutan	15.2	2.4	2.0	41.1	1'770
22	Tonga	21.0	3.3	3.0	56.8	2'320
23	Samoa	31.0	5.1	4.3	83.6	2'430
24	Nepal	34.3	12.1	10.3	80.4	340
25	Bangladesh	35.6	3.4	3.4	137.7	470
26	Lao P.D.R.	38.1	8.2	6.1	555.1	580
27	Papua New Guinea	41.2	5.7	18.0	203.7	850
28	Vanuatu	42.1	16.5	9.8	293.5	1'840
29	Cambodia	43.0	17.9	11.2	201.2	540

Source: ITU

3. Policy, legal and regulatory frameworks

This section of the report highlights the importance of having an effective, relevant and comprehensive policy, legal and regulatory framework in place to support ICT growth and development. It also discusses the current policy, legal and regulatory frameworks of the CLMV countries with a view towards identifying the challenges these frameworks face.

The section is divided into the following sub-sections

- Policy framework
- Trade and telecommunications
- Legislative framework
- Institutional framework
- Regulatory framework
 - Licensing and market entry
 - Competition policy
 - Interconnection and access
 - Infrastructure sharing
 - Retail price regulation
 - Spectrum management
- Universal access
- Cybersecurity

3.1. Policy framework

The establishment of a comprehensive, realistic and detailed national ICT policy is the starting point in any country's effort to facilitate ICT development. It provides leadership for the overall national ICT effort and reflects the commitment of national governments to that effort.

An effective national ICT policy typically seeks to bring together the various facets of government's relationship with the ICT sector, including its role as legislator, regulator, customer, and in some cases investor. It sets out a vision of the country's future ICT infrastructure and services market and how it will serve the country's economy and population, including disadvantaged regions and population segments.

The desired goals for the sector would be identified in such a policy, along with impediments to achieving them and ways of overcoming those impediments. A national policy would address treatment of legacy and planned government investments and public-private partnerships, aims for developing e-government and facilitating e-commerce, as well as employing ICT services on a trans-sector basis in important public services such as health, education, transport and power. An effective national policy would explain the planned investment conditions and legal and institutional framework, providing confidence to draw investment that would otherwise be attracted elsewhere. A national ICT policy ensures that laws and regulations are appropriately framed to give effect to its objectives.

Adopting such a policy provides direction not only to government agencies, but also to ICT stakeholders such as service providers and investors who would be able to make decisions based on those directions.

Although there are policy directions implicit in WTO accession and commitments, planned legislation and licensing of new telecommunications providers, most CLMV countries have not adopted formal national policies on ICT and telecommunications as described above. Other than Viet Nam, the national ICT policies in CLMV countries are largely in the process of transition. Cambodia, Lao PDR and Myanmar are currently in the process of adopting or reviewing new formal policies that are expected to be introduced in the coming years.

All of the CLMV countries enjoy an important opportunity of renewing policies for today's information age. By setting long term policy goals and the legal and economic means of advancing them, the CLMV sub-region can leverage its already impressive growth in voice services outlined in section 1 across the whole ICT sector.

A summary of the telecommunications sector policy status of the CLMV countries is summarized in Table 3.1 below.

Table 3.1 National Telecommunications Sector Policy

Country	Status
Cambodia	<ul style="list-style-type: none"> • No formal telecommunications sector policy • Draft telecommunications policy statement included in the draft telecommunications law
Lao PDR	<ul style="list-style-type: none"> • Telecommunications sector policy adopted in 2004 • 2004 telecommunications sector policy revised in 2007 but revisions not yet adopted
Myanmar	<ul style="list-style-type: none"> • No formal telecommunications sector policy adopted, however an informal policy statement is available • ICT Master Plan drafted but not yet adopted
Viet Nam	<ul style="list-style-type: none"> • Number of detailed telecommunications sector policy documents

Cambodia

At present, there is no formally announced telecommunications sector policy for the country. A draft policy statement is included in the draft telecommunications law which is now in the process of adoption. This brief statement has been used as the official position on policy in the country. The key objectives contained in this statement include:

- ensuring that the telecommunications networks and services in Cambodia are developed and operated in a manner which will best serve and contribute to the overall national, social and economic development and advancement of Cambodia;
- ensuring that telecommunications services are widely and reasonably accessible to the people of Cambodia;
- promoting the supply of diverse and innovative telecommunications services;
- ensuring telecommunications services are priced affordably and cost effectively;

- promoting the participation of private and foreign investors in sustainable investment in telecommunications infrastructure and services development;
- ensuring the highest level of accountability and responsiveness to customer and community needs by telecommunications network and service providers;
- enabling the effective and efficient use of scarce telecommunications resources such as telephone numbers and spectrum frequencies;
- creating a regulatory environment that fosters fair competition and efficient market conduct; and
- promoting the development of technical capabilities and skills in Cambodia.

The policy statement further goes on to state that with a view to ensuring the implementation of the above objectives, the Government will take several steps. These include creation of an autonomous regulatory body and the establishment of a universal access programme. The policy statement further states that further liberalization of the telecommunications sector will be carried out and the policy and regulatory framework will be based on principles of liberalized markets and fair competition.

Lao PDR

In 2004, the Ministry for Communications, Transport, Posts and Construction approved a telecommunications policy statement that identified several objectives which included the adoption of new technologies, the extension of infrastructure to rural and remote areas, the improvement of the delivery of telecommunications services to users, the strengthening of regulatory capability and oversight, improvements network interconnection, the promotion of fair competition and facility sharing, the establishment of a universal access fund and the creation of a regulatory authority. The 2004 policy restricted competition in the telecommunications sector to five major network facility operators until 2007 at which time a review must be undertaken.

This document has been revised successively, most recently in 2007 with the assistance of the ITU. However, it has not yet been adopted by the newly established regulator, the National Authority of Post and Telecommunication (NAPT). The policy however envisages the entry of Lao PDR into the WTO and a subsequent opening of the market to domestic and foreign competition. It also notes that the introduction of new wireless technologies would allow the introduction of more competitors into the market, thus lowering prices and improving services.

Myanmar

Currently, Myanmar has not formally adopted a national telecommunications policy. It nevertheless follows the objectives laid out in an informal telecommunications sector policy statement which provides for the following objectives:

- to increase the deployment of national telecommunications infrastructure;
- to provide a financially viable telecommunications sector conducive to sustainable investment in telecommunications infrastructure;
- to improve the efficiency and effectiveness of telecommunications service delivery to end users;
- to cost effectively satisfy end user demand for telecommunication service;
- to provide telecommunication services at affordable prices; and
- to fulfill universal services obligation to the people of Myanmar.

A formal ICT Master Plan for Myanmar, however, has been drafted with funding support from the Republic of Korea under the Initiative for ASEAN Integration. However, the Master Plan has not been officially adopted. In its present form, the draft ICT Master Plan specifies strategic directions in eight areas: (i) infrastructure development, (ii) ICT industry development, (iii) ICT human resource development, (iv) e-government, (v) informatization and e-commerce, (vi) e-education and awareness building, (vii) ICT liberalization, and (viii) ICT legal framework. ICT liberalization is addressed broadly in terms of investment, production and the distribution of the whole range of ICT products and services, and not narrowly in terms of only telecommunications networks and services.

Viet Nam

In the area of National ICT policy, Viet Nam has promulgated a set of detailed policy statements that include the following:

- Viet Nam Posts and Telecommunications development strategy until 2010 and orientation towards 2020 (Prime Minister's Decision No. 158/2001/QD-TTg of Oct 18, 2001);
- Strategy on Viet Nam information and communication technology development till 2010 and orientations towards 2020 (Prime Minister's Decision No. 246/2005/QD-TTg of Oct 6, 2005);
- Planning on Viet Nam's Telecommunications and Internet development to 2010 (Prime Minister's Decision No. 32/2006/QD-TTg of Feb 7, 2006); and
- a set of three planning documents that deal with the development of ICT to 2010 and orientation towards 2020 in the Central, Southern and Northern key economic regions

In addition to highlighting the importance of ICT and telecommunications to the country and the different key economic regions, the policy documents also provide a list of concrete policy objectives that include, for example, infrastructure deployment targets, growth and penetration targets for the take-up of ICTs services, and resource mobilization targets (e.g. HR capacity building), as well as references to the means and mechanisms through which the objectives should be achieved.

3.2. Trade and telecommunications

In many countries of the world, telecommunications sector liberalization has been stimulated by the WTO negotiation and accession process that led to market opening commitments in a wide range of sectors. In the area of telecommunications, the WTO framework has also crystallized some key best practices for telecommunications regulation in the WTO Agreement on Basic Telecommunications Services and its Reference Paper².

To a large extent, the commitments (or possible future commitments in the case of Lao PDR) made by the CLMV countries on their accession to the World Trade Organization (WTO) have exerted a large influence on their laws and regulations, in particular with regard to their approach

² The WTO Agreement on Basic Telecommunications provides for several key principles: (1) non-discriminatory market access to operators from WTO member countries, (2) that licensing should not be used as a barrier to trade, and (3) that all requirements for market entry for foreign operators should be published. Its annexed Reference Paper covers six broad areas covering (1) Safeguards to prevent Anti-competitive Practices in major suppliers, (2) Interconnection with major suppliers, (3) Universal Service, (4) Transparency in Licensing, (5) Independent Regulator and Allocation and (6) Use of Scarc Resources.

to market entry. While Lao PDR is currently in talks to accede to the WTO, the other CLMV countries are already members of the WTO. Cambodia and Viet Nam are parties to the WTO Agreement on Basic Telecommunications Services and its Reference Paper.

The development of an ASEAN Free Trade Area (AFTA) has also played a part in shaping the market entry and regulatory approaches of the CLMV countries. As members of ASEAN, the CLMV countries are committed to liberalize market entry for telecommunications services as “priority integration services” in the AFTA process.

Having signed up for the framework for trade in telecommunications services, Cambodia and Viet Nam face the challenging process of bringing their draft laws and regulations into force and implementing them in accordance with their WTO commitments. While a WTO member, Myanmar’s success in implementing a framework to attract investment and generate competition without significant WTO market access commitments remains to be seen. Lao PDR is expected to make market access commitments in the near future as it progresses in WTO accession negotiations. It will of course be expected to adopt laws and regulations that give effect to these commitments.

A common thread appears in the CLMV countries. Until WTO commitments are implemented, continued government investments in the sector will likely raise key questions about non-discriminatory market access and treatment of anticompetitive practices.

A summary of the status of trade and telecommunications in the CLMV countries is provided in Table 3.2 below.

Table 3.2 Trade and telecommunications

Country	Status
Cambodia	<ul style="list-style-type: none"> • WTO member since 13 October 2004 • Party to WTO Agreement on Basic Telecommunications Services and Reference Paper
Lao PDR	<ul style="list-style-type: none"> • Currently in accession negotiations
Myanmar	<ul style="list-style-type: none"> • WTO founding member since 1 January 1995
Viet Nam	<ul style="list-style-type: none"> • WTO member since 11 January 2007 • Party to WTO Agreement on Basic Telecommunications Services and Reference Paper

Cambodia

Cambodia has been a member of the WTO since 13 October 2004. It is party to the WTO Agreement on Basic Telecommunications Services and has undertaken to implement the obligations in the annexed Reference Paper. Notably, Cambodia does not impose any market access limitations on the provision of mobile telecommunications services. Under its commitments, Cambodia was obliged to remove limitations on market access for the provision of

voice, packet-based and circuit-based services by 1 January 2009, with the exception of a minimum requirement for local shareholding in telecommunications providers of 49%.

Lao PDR

Lao PDR is currently in negotiations regarding WTO accession. The working party of WTO members negotiating with Lao PDR agreed in its fifth meeting on 14 July 2009 that it can start to consider Lao PDR's future commitments on a range of subjects. Lao PDR has reached a bilateral agreement on market access with China and continues to negotiate with some others, including: Australia, Canada, Taiwan, China, the EU, India, Japan, Rep. of Korea and the US. It had already reached agreement bilaterally with the EU on goods but not yet services.

Myanmar

Myanmar was one of the founder members of the WTO, having been a member since 1 January, 1995. It has undertaken limited commitments with regard to telecommunications services. Although not a party to the WTO Agreement on Basic Telecommunications Services, the country seeks to follow its principles, having prepared a draft Telecommunications Law implementing the Reference Paper. The liberalization of certain services (with some limitations) as part of Myanmar's AFTA objectives has been carried out in phases.

Viet Nam

Viet Nam has been a member of the WTO since 11 January 2007. It is a signatory to the WTO Agreement on Basic Telecommunications Services and its Reference Paper. Viet Nam imposes some market access restrictions. These include, for example, the requirement that foreign investors intending to provide wire-based or mobile terrestrial services must enter into commercial arrangements with local companies that are licensed to provide international telecommunications services. The government is implementing commitments to further liberalize certain market segments within three years of WTO accession with the promulgation of a new Telecommunications Law which is expected to enter into force next year.

3.3. Legislative framework

The legislative framework of a country is the long term basis of its ICT sector. It provides certainty and predictability for investors that seek to operate in its market, and it sets the conditions for competition. When placing large amounts of capital at risk for substantial investment in networks and services, investors require assurance that they will not be subject to regulatory change that undermines their business plans and reduces their returns.

A strong legislative framework also paves the way for an efficient marketplace by defining the rights and obligations of its participants. The presence of a sector law sets the context for the regulatory framework of the sector, preventing arbitrary regulation as well as enhancing harmony in the regulations promulgated.

In recent years, the ICT legislative frameworks of the CLMV countries have largely been in a state of flux, characterized by the ongoing development of new laws for the sector in all four countries. The legislative environment in the sub-region appears to be on the cusp of change, with laws on the drafting table. The prolonged preparation of these draft laws, though, results in some uncertainty. Existing operators and potential investors wait to learn what laws would apply to their substantial capital investments and commercial activities, or when they will be introduced.

The legal framework is typically one of the first questions that investors focus on when considering whether to make substantial capital investments in major infrastructure required to provide major advances in any country’s ICT development effort.

Table 3.3 below provides a summary of the CLMV countries status with regard to telecommunications legislation in particular.

Table 3.3 Telecommunications Legislation

Country	Status
Cambodia	<ul style="list-style-type: none"> • No telecommunications legislation currently in force • New draft law currently undergoing revisions
Lao PDR	<ul style="list-style-type: none"> • Telecommunications Act enacted in 2001 • New draft law, developed with the assistance of ITU, not yet adopted
Myanmar	<ul style="list-style-type: none"> • Telegraphy Act of 1885 and Wireless Telegraphy Act 1985 (amended 1996) in force • New draft law in advanced stage of revision
Viet Nam	<ul style="list-style-type: none"> • New Telecommunications Law and Radio Frequency Law adopted by National Assembly on 23 November 2009 and will enter into force on 1 July 2010

Cambodia

Currently, there is no specific telecommunications legislation in place to govern and guide the sector. In response to this situation, a draft telecommunications law has been in development since 2000, with assistance from the ITU and the Asian Development Bank (ADB).

Cambodia’s draft telecommunications law is currently undergoing revisions after receiving comments and feedback from the private sector. If and when it is finalized, it will be then sent for approval by the Council of Ministers, and then passed to the National Assembly for adoption. It is expected to be enacted in 2010 or 2011.

The draft law proposes to separate the regulatory and policy making functions of the Ministry of Post and Telecommunications (MPTC) by establishing a standalone regulator which will assume the traditional roles of licensing, spectrum management, interconnection regulation, universal access and numbering. It will also clarify rules and regulations on pricing, interconnection, infrastructure sharing, and consumer protection. As currently drafted, the draft law also envisages a transition period following the enactment of the legislation. Within that period, operators would be required to obtain new licenses that are provided for under the legislation. More details on the draft law were unavailable for the preparation of this report.

Lao PDR

The Lao National Assembly adopted a Telecommunications Act in April 2001. The Act refers to the paramount importance of telecommunication in the development of Lao PDR, as well as the role played by the private sector in developing the industry.

The current Act compartmentalizes telecommunications systems into PSTN, wireless and a combination of wireline and wireless. It also categorizes telecommunications services into international and national and provides a list of telecommunications services available in the country. The Act also provides for the setting up of a fund to support universal access, a list of consumer rights and service provider duties, and the basis for the payment of charges and levies. It also sets out the tasks and powers of the relevant ministry and departments. It does not address, however, issues such as interconnection, competition, infrastructure sharing and pricing. As the Act is relatively concise, the Act envisages the passing of subsidiary legislation or regulations to make its provisions operational. The boundaries of legal powers under the Act and the scope of such regulation are not entirely clear.

In October 2007, a substantial portion of the powers under the Act which were granted to the Ministry of Communications, Transport, Posts and Construction (MCTPC) were transferred to the newly formed regulator, the National Authority of Posts and Telecommunications (NAPT) under a Prime Ministerial Decree (No.375/PM of 22 October 2007). Although having the status of a Law, the Decree, did not refer to Telecommunications Act of 2001. The lack of correlation between the two documents results in some ambiguity (see Section 3.5.1 on Licensing and market Entry below, for example).

Given the need for a comprehensive legislative framework, and for new legislation to reflect the convergence of services and to cope with the envisaged introduction of increased competition, a new telecommunications law has been drafted with the assistance of ITU. The draft law is currently under consultation and is expected to be finalized and submitted to the General Assembly for approval next year. More details on the draft law were unavailable for the preparation of this report.

Myanmar

At present the Telegraphy Act of 1885 governs the telecommunications sector in Myanmar while the Wireless Telegraphy Act of 1985 (amended 1996) deals with the licensing and use of wireless apparatus. Other ICT related laws include: the Computer Science Development Law of 1996, which focuses on the use of computer science; the Electronic Transactions Law of 2004; and the Wide Area Network Order (Notification No. 3/2002) concerning the establishment of a computer wide area network and the prohibition of illegal acts relating to those networks.

The Telegraphy Act and the Wireless Telegraphy Act are expected to be replaced by a new Telecommunications Law. Several drafts of the new law have been completed and it has recently been tabled for cabinet review and approval. It is expected to be enacted in 2010 or 2011.

The new Telecommunications Law is intended to regulate computer and ICT related activities including: *(i)* permissions to establish a telecommunications business; *(ii)* the issuing of licenses for the ownership of equipment and network service businesses; *(iii)* the import and export of telecommunications materials; *(iv)* licenses to establish computer networks; *(v)* administration of the frequency spectrum; *(vi)* technology norms and standards; *(vii)* consumer protection; and *(viii)* the installation and maintenance of networks and equipment. In its current form, the draft Law

does not go into detail about competition policy, pricing and universal access. It will, however, address issues related to interconnection and consumer protection. More details on the draft law were unavailable for the preparation of this report given its current state of development.

Viet Nam

In light of Viet Nam's WTO commitments, the Government of Viet Nam has initiated a series of sector reforms which include, in particular, the overhaul of telecommunications sector legislation. This has involved drafting new laws to replace the Posts and Telecommunications Ordinance which has been the primary piece of legislation for the sector.

On 23 November 2009, the National Assembly approved the Telecommunications Law and the Radio Frequency Law. The two laws will come into effect on 1 July 2010.

Key elements of the new Telecommunications Law include the following:

- a reduction of restrictions on the private ownership of facilities based operators except for those considered of "special importance" to the national telecom network, economy and security;
- introduction of an open and transparent process of granting telecommunications licenses and a reduction in the number of steps required in the registration procedures;
- a recognition of convergence by the equal treatment of telecommunications and broadcasting infrastructure;
- the introduction of competition rules through requiring approval of the Ministry of Information and Communications (MIC) for any economic concentration of telecoms businesses that results in an accumulated market share of more than 50% in the related market;
- a requirement that telecommunications resources with a high value be allocated either via a public auction or beauty contest;
- a recognition of the transferability of telecommunications resources if they are obtained through public auction;
- the application of access and interconnection obligations to enterprises which possess essential facilities;
- the introduction of a strong mechanism to encourage infrastructure sharing; and
- the establishment of a specialized telecommunications regulatory authority to deal with issues such as competition, dispute settlement, interconnection and infrastructure sharing. This body, however, will be constituted as an "assisting" body of the MIC which remains the telecommunications policy-making body and the ultimate owner of a number of facilities-based operators in Viet Nam.

3.4. Institutional framework

There are various players involved in the ICT sector. The establishment of a clear framework for the institutions involved, setting clear lines of responsibility and reporting, is an essential prerequisite for any government-led national effort to ensure ICT development. A sound legal basis for the establishment of the institution and a clear mandate, in terms of powers, functions and duties, for each institution must be provided when making institutional changes in order to ensure legitimacy and to minimize overlaps or gaps in jurisdiction.

In the context of the ICT sector, the definition of the roles of the sector policy maker and regulator are particularly important. In the case of the regulator, regulatory independence from

sector operators is a key tenet of international best practice. The absence of an institutional separation of the regulatory function from network operation and service provision weakens the impartiality of a sector regulator. This in turn undermines operator and investor confidence in the regulatory framework, and so limits the inflow of capital investment and effective competition.

Regulatory independence from political influence is also highly important. It ensures that delegated power is exercised according to preset principles and constraints. It also provides operators and investors with a buffer against unpredictable political vagaries that may adversely influence regulation, their businesses and return on capital invested.

Just as policy and legislation should be drafted with ICT convergence in mind, the organization of institutions dealing with ICT must also take into account the converged nature of ICT infrastructure and technology, avoiding the artificial separation of functions where possible.

In the CLMV context, reform of existing institutions is continuing apace with the recent establishment of a specialized ICT sector regulator in Lao PDR, and the planned establishment of specialized ICT sector regulators in Cambodia and Viet Nam. The status of institutional reform in the four countries, especially with regard to the regulation of the telecommunications sector, is summarized in Table 3.4 below.

Table 3.4 Key Telecommunications Policy and Regulatory Institutions

Country	Status
Cambodia	<ul style="list-style-type: none"> • Ministry of Post and Telecommunications (MPTC) performs policy-making and regulatory functions
Lao PDR	<ul style="list-style-type: none"> • Ministry of Communication, Transport, Post and Construction (MCTPC) performs policy functions • National Authority of Post and Telecommunication (NAPT) performs regulatory and supervisory functions
Myanmar	<ul style="list-style-type: none"> • The Ministry of Communications, Posts and Telegraphs (MCPT) is responsible for ICT policy and regulation • It is made up of two separate departments - the Myanmar Posts and Communications (MPT) department, which is the state-owned telecommunications operator, and the Posts and Telecommunications Department (PTD), which is the regulatory authority
Viet Nam	<ul style="list-style-type: none"> • The Ministry of Information and Communication (MIC) performs policy and regulatory functions • A new specialized regulatory body will be established under the new Telecommunications Law

Separation of the sector regulatory function from provision of networks and services is still a work in progress. Sector Ministries in some of the countries still retain ultimate ownership interests in operators operating in the markets they oversee. Institutional separation of the regulator from the sector ministry or policy maker in the CLMV sub-region is largely absent.

While new laws in some countries provide for the creation of a specialized regulatory body, the regulatory body envisaged will remain subject to the direction of the parent ministry. CLMV countries could consider the significant benefits enjoyed by other countries which have undertaken more extensive separation of policy, regulatory and operational functions.

Lastly, as in most countries, the convergence of carriage and content services, of fixed and wireless services and of broadcasting, computing and telecommunications, must be taken into account in designing the institutional framework. This means either instituting a regulator with powers in the media, telecommunications and information sectors and in dealing with competition, or ensuring extensive coordination among regulators in these areas.

Cambodia

In Cambodia, the National Information and Communication Technology Development Agency (NiDA) was established in 2000 to promote ICT in the country. Currently, it is tasked to formulate ICT policy for short-, medium-, and long-term development. It is under the Office of the Council of Ministers and is chaired by the prime minister. There are five divisions under NiDA — one each for infrastructure, policy, human resource, development, and enterprise and content and applications.

Regulatory and policy making functions specific to telecommunications are performed by a single body, the Ministry of Post and Telecommunications (MPTC). While previously directly involved with the operation of telecommunications services, the MPTC has separated itself from those operations by creating a separate state-owned corporatized entity – Telecom Cambodia (TC) – to assume its previous telecommunications operational functions.

The MPTC in its current form is headed by the Minister who oversees a staff of 55 personnel. Its operating expenses are entirely funded through the government budget.

The draft telecommunications law in its current form proposes to separate the regulatory and policy making functions of the MPTC by establishing a specialized regulator which will assume the traditional roles of licensing, spectrum management, interconnection regulation, universal access and numbering.

The Ministry of Commerce also plays a role in the development of Cambodia's ICT infrastructure. It is currently involved in the drafting of e-commerce, intellectual property rights, and trade legislation and regulation. Cambodia's Ministry of Education, Youth and Sport is also working to integrate ICT into the school curriculum through the establishment of purpose-built computer classrooms and the use of Khmer language open source software.

Lao PDR

Up until October 2007, the Ministry of Communication, Transport, Post and Construction (MCTPC) was the government agency responsible for telecommunication policy and regulation. After October 2007, the regulatory and supervisory powers of the MCTPC were transferred to the National Authority of Post and Telecommunication (NAPT) by Decree of the Prime Minister (No.375/PM of 22 October 2007). Under the decree, the NAPT was formed as a state administration under the Prime Minister's Office. The NAPT is tasked with dealing with the regulation and administration of telecommunications and with ICT issues. Under the same decree, policy-making in the telecommunications and ICT sector were brought under the purview of the Prime Minister's Office.

The NAPT is headed by a chairman who oversees a staff of around 130 personnel. The NAPT's operations are largely funded through government appropriation.

It is envisaged that the new telecommunications law will provide in greater detail the regulatory responsibilities and powers of the NAPT.

The Lao National Internet Committee (LANIC) manages Internet related development activities which include the licensing of Internet related services, the operation of the national Internet gateway and Internet exchange point, and the administration of the country code top level domain (ccTLD).

The National Agency for Science, Technology and the Environment is tasked with formulating and implementing information technology (IT) policies and strategies.

Myanmar

The Ministry of Communications, Posts and Telegraphs (MCPT) is the body responsible for ICT policy and regulation within the country. The MCPT is basically made up of two separate departments - the Myanmar Posts and Communications (MPT) department, which is the state-owned telecommunications operator, and the Posts and Telecommunications Department (PTD), which is the regulatory authority.

The head of the PTD is appointed by the cabinet upon recommendation by the Minister. He leads a staff of 77 that include economists, engineers and technicians. The operations of the PTD are entirely funded by government appropriation.

The new draft Telecommunications Law in its current form does not address in detail the institutional arrangements with regard to sector regulation. In effect, however, the process of ensuring the functional separation of the regulator from the operator is ongoing. The MCPT, however, will remain as policy maker and certain aspects of the regulator's functions will continue to require ministerial approval. The MPT along with other new operators is not expected to retain significant regulatory functions.

Other key institutions dealing with ICT development include the Myanmar Computer Science Development Council (MCSDC), the e-National Task Force (e-NTF) and the Myanmar Computer Federation (MCF).

Viet Nam

In August 2007 the Ministry of Information and Communication (MIC) was created through the merger of the Ministry of Post and Telematics with some units of the Ministry of Culture and Information. A new National Steering Committee for ICT headed by the deputy prime minister was also formed. The Committee is expected to assist the Prime Minister in overseeing ICT development and in coordinating inter-ministerial functions and activities that involve cross-cutting ICT related issues.

ICT-related activities are also being implemented by other ministries, such as the Ministry of Science and Technology (MOST) and the Ministry of Industry and Trade (MOIT) which oversees the development and promotion of e-commerce. Training and education in ICT is organized by the Ministry of Education and Training (MOET).

ICT is likewise being promoted by several organizations outside of government. Within the Central Committee of the Communist Party, there is a Committee for Science and Education that is concerned with ICT-related matters. The National Assembly also has a Committee for Science, Technology and Environment that proposes various ICT-related legislative activities.

Currently, the MIC performs the function of policy-maker and regulator for the telecommunications sector. Under it the radio frequency directorate manages radio spectrum matters.

The new Telecommunications Law envisages a separation of the MIC's policy making and regulatory functions by establishing a specialized regulator under MIC.

3.5.Regulatory framework

Laws typically only address high level issues. Regulations are the means by which legislation and policy are translated into reality in the market place. They therefore play a critical role key in delivering the objectives of growth and development in the ICT sector.

In this section, the report reviews the ICT regulatory framework in the CLMV countries with regard to its key components, namely licensing, competition policy, interconnection and access, infrastructure sharing, pricing and spectrum management.

Over the past few years, the establishment of an ICT regulatory framework in the CLMV region has been an ongoing process. To date, with the exception of Viet Nam, a very limited number of regulations have been promulgated in the sub-region in the ICT sector.

3.5.1. Licensing and market entry

The development of a transparent, simplified and standardized licensing procedure is important in order to facilitate market entry. Under such conditions, operators that seek to enter the market can do so with more clarity and speed. Applying standard license conditions is also important to ensure a fair and level playing field for operators that compete in the same market. It also reinforces the principle of impartiality in regulation.

On a global level, the trend in licensing is towards the granting of general authorizations or class licenses for the provision of services that generally do not require the use of scarce resources or that do not involve the deployment of infrastructure (e.g. the provision of Internet services over leased facilities). Such licensing regimes speed up the process of market entry and reduce the regulatory burden on new market entrants.

Licensing regimes today also increasingly embody the phenomenon of convergence between content and carriage by making less of a distinction on the basis of the services provided but instead on the infrastructure used (e.g. the granting of a facilities-based license that allows the provision of voice and Internet services).

Currently, the CLMV countries have not established formal and transparent licensing procedures. While some standardization in licensing procedures and license terms and conditions may have been adopted largely through precedents, licensing procedures in most countries of the sub-region remain relatively opaque. This situation, however, is expected to change if new telecommunications laws are enacted.

To a large extent, ICT services in the CLMV countries continue to be licensed on the basis of traditional categories (e.g. local fixed-line voice services, international long distance, etc.). Such an approach may prevent operators from realizing the synergies brought about by the convergence of ICT services (e.g. the use of a network to provide voice, broadcasting and Internet services). A summary of the status of the licensing framework in the four countries is set out in Table 3.5 below.

Table 3.5 Licensing and Market Entry

Country	Status
Cambodia	<ul style="list-style-type: none"> • Licensing is regulated by the MPTC • No licensing legislation or regulations in force • Licenses are confidential
Lao PDR	<ul style="list-style-type: none"> • Licensing is regulated by the NAPT • No formal licensing regulations in force
Myanmar	<ul style="list-style-type: none"> • Licensing regulated by various government agencies • No formal licensing regulations in force
Viet Nam	<ul style="list-style-type: none"> • Licensing regulated by MIC according to licensing regulations • New Telecommunications Law will introduce a transparent and simplified licensing framework

Cambodia

Currently in Cambodia there is limited formal guidance on the licensing process in terms of legislation or regulations. Historically, licenses were issued on an *ad hoc* basis since the 1990s when the telecommunications sector was opened up to private investment. During the initial period, licenses were issued without a standard procedure and uniform conditions.

Currently, licensing is regulated by the MPTC. The MPTC determines the number of licenses to be awarded and the type. The licensing procedure consists of an application being made to the government (either to the MPTC or the prime minister's office) followed by an examination and consideration by the secretariat of the MPTC before any issuance of a license. No formal document outlining this procedure, however, was available for the purposes of this report. License documents are confidential; however, there are indications that licenses recently issued contain uniform terms and conditions. Annual license fees, however, are payable on the basis of gross revenue sharing.

The draft Telecommunications Law envisages a more transparent licensing procedure that will facilitate market entry.

Lao PDR

Historically, different licenses have been granted to different operators by different agencies in the Government at different times. For example, the license to Millicom Lao Ltd. (MLL) was issued by the Foreign Investment Management Committee of the Lao PDR for the provision and operation of GSM Digital Cellular Mobile, International Gateway, Wireless Local Loop telecommunications services. The license to Star Telecom Company Limited (Startel) was issued by the Ministry of Planning and Investment which granted a Foreign Investment License to conduct a business involving the provision of full telecommunications services. Although the details of these licenses remain confidential, they are understood to contain different terms and conditions with limited details that prescribe their operation.

Currently, license issuing powers have been centralized in the NAPT by Prime Ministerial Decree.

A number of draft licensing regulations have been prepared with the assistance of external consultants, none of which are currently in force. It is envisaged that a standardized licensing regime will be put in place after the promulgation of the draft Telecommunications Law that is currently in the process of being adopted.

Myanmar

Presently, there is yet no formal licensing regime in force.³ MPT and Myanmar Teleport were awarded licenses by Ministerial Decree. The current draft of the new telecommunications law, however, has a chapter on licensing which has been drafted with a view towards the development of a multi-operator telecoms market. The new licensing regime is expected to be based on facility based and service based categories which will include licenses such as a Network Service Provider license, Application Service Provider license, Content Application Service license, Telecoms Equipment license, among others.

Viet Nam

Currently, licensing in Viet Nam is regulated by the MIC under the provisions of the 2002 Ordinance. It also regulates licensing pursuant to other legislation in force. For example, in August 2008, the Government promulgated a decree (Decree 97/2008/ND-CP) on providing and using Internet services and electronic information transmitted via the Internet to foster Internet development and simplify Internet licensing procedures.

The new Telecommunications Law is expected to further streamline the licensing process by introducing a sector-wide open and transparent process of granting telecommunications licenses and a reduction in the number of steps required in the registration process.

³ Section 4 of the Telegraph Act 1885 provides for the granting of a license, on such conditions and in consideration of such payments as [the President of Union?] thinks fit, to any person to establish, maintain or work a telegraph within any part of Burma. The second proviso of the Act stipulates that the "President of Union may, by rules made under this Act and published in the Gazette, permit, subject to such restrictions and conditions as he thinks fit, the establishment, maintenance and working (b) of telegraphs other than wireless telegraphs within any part of Union of Burma." In the case of wireless networks, Section 3 of Wireless Telegraphy Act of 1934 states that "Save as provided by section 4, no person shall possess wireless telegraphy apparatus except under and in accordance with a license issued under this Act."

3.5.2. Competition policy

Internationally, there has been a trend towards the adoption of competition policy practices in the regulation of telecommunications. Ensuring that ICT markets function competitively is leading worldwide to greater investment in ICT networks and services, and to improved pricing, quality and variety of services for businesses and populations.

The application of a competition policy approach in telecommunications allows regulators to reduce the regulatory burden in situations where a competitive market exists and allow it to concentrate on the regulation of operators that are “dominant” or that have “significant market power (SMP)”. Dominance or SMP typically mean that a provider has so much power in the market that it is not significantly influenced by its customers or suppliers. The concern is typically that it can dictate terms to customers, suppliers and also to competitors, and lacks incentives to improve the pricing and quality of its service offering. Focusing on providers with SMP allows the regulator to direct its resources more efficiently and to reduce the burden of regulation on the large majority of operators which do not require to be regulated as heavily.

As highlighted in Section 2.3 above, operators in a number of CLMV ICT market segments may enjoy competitive advantages over their competitors as a result of the large market share they possess or the essential facilities they control. With the exception of Viet Nam, competition policy principles and processes have not been widely incorporated into the regulatory frameworks of the CLMV countries. The absence of a competition policy regime can be expected to prolong market power imbalances in the sector and hamper the benefits of competition in the sub-region.

Competition policy also typically concerns the degree of consolidation in the market. In several of the CLMV countries, operators and service providers are inter-related, with common shareholders and cross shareholdings. Whether this reduces the intensity of competition might be an area for exploration if governments seek to maximize the benefits of the sector for customers. A summary of the status of competition policy in the CLMV countries is highlighted in Table 3.6 below.

Table 3.6 Competition Policy

Country	Status
Cambodia	<ul style="list-style-type: none">• No framework for the regulation of competition• Ad hoc competition related directives issued by the MPTC
Lao PDR	<ul style="list-style-type: none">• No competition related regulations in force
Myanmar	<ul style="list-style-type: none">• No competition related regulations in force
Viet Nam	<ul style="list-style-type: none">• Regulations defining Significant Market Power (SMP)• Asymmetrical regulation imposed on SMP providers in the area of tariffs and pricing

Cambodia

Until recently, there was no formal framework for the regulation of competition in the Cambodian telecommunications market. In September 2009, however, the MPTC issued a circular in response to a dispute in the mobile market between Mobitel and Sotelco (Beeline) over alleged retail predatory pricing. The Inter Ministerial Circular (No. 1277 MPTC/MEF) on unfair competition dated 29 September 2009 contained points that emphasized fair competition and the provision of a good quality of service. It focused mainly on the prohibition on setting prices below levels fixed by the MPTC and its detrimental effect on company revenues which in turn affect the national budget through a decrease in the amounts raised through revenue sharing and taxation.⁴

There are currently no other regulations in place addressing other aspects of competition policy such as dominance and significant market power, as well as anti-competitive behavior. The new draft Telecommunications Law is expected to contain provisions that address these concerns.

Lao PDR

Currently Lao PDR does not have any regulations in force that deal with the issue of competition policy. The current 2001 Telecommunications Law does not address competition policy although its new telecommunications law is expected to address the issue.

Myanmar

Currently, Myanmar does not have any regulations in force that deal with the issue of competition policy. Its new draft telecommunications law is not expected to have substantial provisions on the topic.

Viet Nam

Under the 2002 Ordinance, additional obligations are imposed on operators that are in a dominant position (or a position of “significant market power or SMP”) and who control “essential facilities”. The Ordinance prescribes a threshold for the presumption of market dominance, which is defined as a 30 percent market share in respect of one type of service in a licensed geographical area. In practice, however, market dominance is determined by the telecom regulator and attracts specific restrictions according to the regulations in force, such as a requirement for separate accounting and the “supervision and surveillance” of market share and tariffs.

The MIC issues an annual list of services and operators subject to its SMP regime. Under this regime, operators having a combined market share exceeding 65 per cent of related services segments may also be defined as having SMP. For example, in November 2008, the MIC released a list of SMP operators in seven service markets that included international calls, long-distance calls, international leased lines, domestic leased lines, mobile telephony, wireless local loop and ADSL. Under the regime, SMP operators are under certain obligations to either notify or register for approval changes in tariffs with the regulator depending on the type of service offered.

⁴ It is not entirely clear whether the circular sought to prevent anticompetitive “dumping” (i.e., pricing services low to push competitors out of the market) or to maintain higher prices for national budget purposes.

3.5.3. Interconnection and access

An effective regulatory framework must address the issue of interconnection between networks and access of service providers to the networks and infrastructure of existing operators. In a competitive multi-operator environment, interconnection and access are essential to produce connectivity and optimal use of a country's resources. But because they facilitate competition, they are typically also key points of contention between competitors who seek to interconnect on the most advantageous terms and conditions. Moreover, operators who control essential facilities or who have large networks have less incentive to interconnect or allow others reasonable economic and technical conditions for using their networks or infrastructure. The risk of such operators using such market power to prevent or hinder the entry of new operators into the market is typically addressed through regulation in advance.

Despite the presence of multi-provider telecommunications markets in all the CLMV countries, the promulgation of interconnection regulations among the four countries differs widely. Interconnection appears to be addressed inconsistently, with some countries having no interconnection or access regulations in place. This, however, is expected to be addressed by the passage of new telecommunications laws in these countries. A brief summary of the current status is set out in Table 3.7 below.

In cases where there are limited interconnection regulations in place, there may be scope to refine them further, particularly with a view towards imposing specific interconnection regulations on dominant or SMP providers so as to improve the level of competition.

Table 3.7 Interconnection and Access

Country	Status
Cambodia	<ul style="list-style-type: none">• Interconnection directive and regulation in force
Lao PDR	<ul style="list-style-type: none">• No interconnection regulations in force
Myanmar	<ul style="list-style-type: none">• No interconnection regulations in force
Viet Nam	<ul style="list-style-type: none">• Interconnection regulated by MIC• Requirement for all interconnection agreements to be registered with the regulator

Cambodia

In October 2009, the MPTC issued a declaration (Declaration No. 206 MPTC dated 05 of October 2009) on interconnection of telecommunications networks. The declaration addressed the following issues:

- the definition of interconnection;
- the purpose of network interconnection;
- interconnection rights and obligations;
- the procedure for negotiating interconnection agreements, the nature of interconnection agreements and their termination;

- interconnection charging;
- interconnection technical conditions including a mechanism for the determination of interconnection capacity and interconnection quality;
- the provision of interconnection reports; and
- interconnection dispute resolution.

This declaration was supplemented by a subsequent regulation (Government Status no. 01 BB dated 21 October 2009) on the blocking of network interconnection that was designed to bring an end to the dispute between Mobitel and Sotelco (Beeline) over predatory pricing and refusal to interconnect.

These regulations replace the interconnection regulations first introduced by the MPTC in 2003 which had grown obsolete in the face of increasing competition and market entry.

Lao PDR

Currently, there are no interconnection regulations in force in the country. Although there is an obligation on service providers to interconnect their networks under the 2001 Telecommunications Act (Article 14), interconnection takes place on a negotiated basis between service providers. In practice, interconnection disputes are informally resolved through a mediation process managed by the NAPT.

Myanmar

There are currently no laws or regulations that deal with interconnection. Interconnection between MPT and Myanmar Teleport are directly negotiated under the oversight of the MCPT.

The new draft telecommunications law is expected to address interconnection in the context of a multi-operator market in its provisions.

Viet Nam

The 2002 Ordinance creates an open interconnection regime entitling all telecom network operators to interconnect with each other on a “*fair and reasonable*” basis. As highlighted in the preceding section, however, particular obligations are placed on parties (i) who are in a dominant position in respect to the provision of interconnection and (ii) who control “essential facilities” (though this key term is left undefined). These obligations provide for good faith negotiations and prohibit a refusal to interconnect.

Interconnection is governed by regulations issued by the regulator and interconnection agreements must be registered with the regulator, at which point they take effect. Time limits are prescribed for the conclusion of interconnection negotiations, failing which the regulator has the power to arrange mediation between the parties, and failing that, to intercede and determine an outcome. Under subsequent regulations promulgated by the regulator, operators are required to negotiate and enter into interconnection agreements on an annual basis.

3.5.4. Infrastructure sharing

For both fixed and mobile networks, the deployment of infrastructure constitutes more than half the cost of provisioning service, without taking into account the time spent in deploying the infrastructure. As a result, infrastructure sharing has been embraced by many regulators as a way to reduce the costs of infrastructure deployment, especially in rural areas, and to speed up the deployment of new services (and the entry of new market participants in some cases). Infrastructure sharing is also increasingly seen as a way to reduce the impact of infrastructure deployment on the environment. In addition to signaling the permissibility of infrastructure sharing, regulations on infrastructure sharing are also sometimes necessary to prevent anti-competitive collusion between operators.

To a significant extent, the ICT networks, both fixed and mobile, in the CLMV countries have been rolled out on an individual operator basis with each operator owning and deploying its own infrastructure. In some situations this can lead to unnecessary infrastructure duplication. More regulators in the CLMV countries have therefore started to encourage infrastructure sharing in their markets on a number of different levels. For example, infrastructure sharing can extend to passive infrastructure (e.g. towers and masts, ducts and trenches, etc.) or active infrastructure (e.g. antennae systems, backhaul transmission systems, etc.).

The adoption of infrastructure regulation in the CLMV sub-region has not been universal. Nevertheless, given the benefits associated with the practice and the fact that new networks are constantly being deployed in the sub-region, promulgating regulations in this area would play a valuable role in encouraging the practice. The status of infrastructure sharing in the CLMV countries is set out in Table 3.8 below.

Table 3.8 Infrastructure Sharing

Country	Status
Cambodia	<ul style="list-style-type: none">• No infrastructure sharing regulations in force• The licensing of infrastructure providers is required
Lao PDR	<ul style="list-style-type: none">• No infrastructure sharing regulations in force
Myanmar	<ul style="list-style-type: none">• No infrastructure sharing regulations in force
Viet Nam	<ul style="list-style-type: none">• Infrastructure sharing is regulated by the MIC pursuant to the 2002 Ordinance• MVNOs are permitted subject to licensing

Cambodia

Currently, Cambodia does not have laws or regulations on infrastructure sharing. Nevertheless, in November 2009, the MPTC endorsed the principle of infrastructure sharing through its award of a 35-year license to Tower Master Cambodia to build mobile infrastructure designed for infrastructure sharing across the country. The shared use of Tower Master's infrastructure is expected to reduce both the cost of network deployment and impact on the environment. The first

stage will see the company invest USD20 million in the construction of 100 shared antennas with a total of 4,500 planned for deployment in the future.

The current draft Telecommunications Law includes provision introducing the principle of infrastructure sharing among licensees.

Lao PDR

At the present time, the laws and regulations of Lao PDR do not address the topic of infrastructure sharing. From official inputs received for this report, infrastructure sharing, however, is allowed.

Myanmar

At the present time, the laws and regulations of Myanmar do not address the topic of infrastructure sharing.

Viet Nam

Under the 2002 ordinance, infrastructure sharing between operators is allowed subject to technical compatibility and successful negotiations between the parties involved. The newest mobile network entrant GTel was granted permission to deploy a 3G network in cooperation with Vinaphone in early 2009.

Mobile virtual network operator (MVNO) services are permitted, subject to licensing, in Viet Nam. In August 2009, the MIC granted a MVNO license to Indochina Telecom to provide MVNO services. Indochina Telecom is expected to share 3G network facilities with Viettel, a mobile network operator. In the following month the MIC received two other applications for MVNO licenses.

3.5.5. Retail price regulation

In most countries, extensive retail price regulation was necessary in the past to moderate the effects of monopoly prices in the telecommunications sector. In a competitive environment, retail prices regulation is much less necessary, and in some cases is not required at all. Where possible, regulators internationally focus on market power in the provision of wholesale services (for example, access to essential facilities, capacity, IRUs for international capacity, leased lines, bitstream and unbundled local loop) on the theory that if these are correctly regulated, competitive retail markets that use them will function better.

Even so, retail price regulation is sometimes implemented even where more than one provider is present for a variety of reasons, for example, to prevent pricing distortions in markets that are imperfectly competitive, to ensure a certain level of affordability as part of a wider policy goal, and to bring about tariff rebalancing.

Retail pricing is a key component in attracting investment, since price controls directly affect revenues from services and approval processes can slow down and undermine competitive dynamics in the market. There are also typically significant political pressures on retail price levels, which can lead to political influence over regulation and service providers. The combination of these factors can reduce anticipated returns on investment, making an ICT environment less attractive for new providers to enter.

Historically, some form of retail price control has always been in place in the CLMV countries. In some cases these have been withdrawn with the increase in the level of competition in their markets. Currently, each country has taken a different approach to price regulation.

Most of the CLMV countries have elected until now not to address the regulation of retail pricing through a formal set of regulations. Still, beginning to do so might allow them to target their regulatory resources more directly where the problems lie. And adopting appropriate retail price regulations can prevent pricing abuses in circumstances where dominant or SMP operators have sufficient market power to raise or lower prices anti-competitively.

Table 3.9 Retail Price Regulation

Country	Status
Cambodia	<ul style="list-style-type: none"> • Retail price regulation of international outgoing calls • Regulation on unfair competition imposing price floors for mobile calls
Lao PDR	<ul style="list-style-type: none"> • No regulations addressing price regulation although historically set by the Ministry
Myanmar	<ul style="list-style-type: none"> • No retail pricing regulation
Viet Nam	<ul style="list-style-type: none"> • Retail price regulation of SMP providers

Cambodia

Historically, international outgoing call prices have been fixed by the MPTC. This has been done primarily on the basis of benchmarking with the prices prevalent in neighboring countries.

Recently, however, a regulation on pricing was issued. The Inter Ministerial Circular (No. 1277 MPTC/MEF) on unfair competition dated 29 September 2009 prohibits the setting of prices below that fixed by the MPTC.

Lao PDR

At present, there are no laws and regulations addressing price regulation, although the prices for fixed-line local telephony were historically set by the Ministry. A number of draft regulations addressing retail tariffs and price plans were developed with the assistance of external consultants in 2004.

Myanmar

Currently no laws and regulations address the topic of price regulation. In practice however, the MCPT regulates the prices for all telecommunications services in the absence of competitive pressure.

Viet Nam

In Viet Nam, the pricing regime is defined by regulation (Prime Minister Decision 39/2007/QD-TTg) that marks a transition from the historical heavy tariff regulation in a monopolistic operator environment to a lighter regime that is characteristic of a competitive market. Under the present regime, the MIC regulates the retail prices of operators that have SMP. All other operators are permitted to set their retail prices based on market forces. The regulator currently regulates residential local fixed telephone call and subscription prices. However, it has indicated that those measures will be lifted by the end of 2010 allowing operators to decide prices within a 50% band thereafter.

3.5.6. Spectrum management

Recent years have begun to show the extensive usefulness of the radio spectrum for telecommunications. As a limited national resource, the management of radio frequency spectrum needs to be pursued in an efficient, transparent and orderly manner. These requirements extend to all the tasks associated with spectrum management which include spectrum planning, assignment, monitoring and enforcement.

Beyond the competent performance of the technical tasks associated with spectrum management, efficient spectrum allocation and assignment, in particular, has been identified as a key factor in ICT development efforts. With the increasing use of wireless technologies to deliver new ICT services and to improve access to ICT, the efficient allocation and assignment of spectrum resources have become an important priority for governments worldwide.

With the overwhelming adoption of wireless technologies, especially mobile telephone services, in the CLMV countries, it is particularly important to ensure the proper management of spectrum resources.

The degree to which formal spectrum laws and regulations have been adopted to guide spectrum management varies from country to country in the CLMV sub-region. In a number of countries, spectrum management is carried out without reference to a set of formal regulations. While such a situation may cope with present needs, as demands on frequency spectrum grow it will become increasingly important to ensure efficiency through more detailed planning and streamlined processes. A summary of the status of spectrum management is set out in Table 3.10 below.

Detailed laws and regulations to ensure commensurate returns to the state for the use radio spectrum resources used by operators may also be necessary as the need for radio spectrum increases.

Table 3.10 Spectrum Management

Country	Status
Cambodia	<ul style="list-style-type: none">• Spectrum management performed by MCPT• No legislation or regulation of spectrum management and usage
Lao PDR	<ul style="list-style-type: none">• Spectrum management carried out by NAPT• Currently there are no regulations on spectrum management
Myanmar	<ul style="list-style-type: none">• Spectrum management conducted by the PTD pursuant to the Wireless Telegraphy Act• Currently no regulations are in force with regard to spectrum management
Viet Nam	<ul style="list-style-type: none">• Spectrum is managed by the Radio Frequency Directorate of the MIC under the 2002 Ordinance• New Radio Frequency Law will come into force in July 2010

Cambodia

Currently, spectrum management functions are carried out by the MCPT. It allocates and assigns frequencies, and performs technical monitoring functions.

At present, no legislation or regulations have been put into place to regulate spectrum management, although the draft law envisages the delegation of spectrum management functions to the new regulator that will be established under that law.

Spectrum is currently assigned on a “first-come, first served” basis in connection with licenses to provide the related telecommunications service. No recurring spectrum fees are payable under the current framework.

Lao PDR

Spectrum management is carried out by the NAPT who performs the role of spectrum coordination, allocation, assignment, monitoring and enforcement pursuant to its enabling Decree. There are currently no regulations on spectrum management.

Spectrum is assigned on a “first-come, first-served” basis in conjunction with the connected license for service provision. The NAPT levies recurring fees for spectrum usage.

Myanmar

The PTD in Myanmar performs spectrum management functions. Spectrum management tasks are carried out pursuant to the Wireless Telegraphy Act. To date, no regulations have been promulgated on spectrum management.

Currently, spectrum is assigned on a “first-come, first-served” basis. Recurring fees are levied for the use of spectrum.

Viet Nam

In Viet Nam, spectrum is managed by the Radio Frequency Directorate of the MIC which performs spectrum allocation, assignment, monitoring and enforcement pursuant to the 2002 Ordinance. The government and the MIC issue directions, decisions and guidelines regulating the use of spectrum.

Spectrum is assigned in a number of ways, including “first-come, first-served”, payment of a fixed fee, and beauty contests. Recurring fees are levied on spectrum use.

The new Telecommunications Law incorporates a provision requiring that telecommunications resources with a high value be allocated either via a public auction or beauty contest. The new law also recognizes the transferability of telecommunications resources if they are obtained through public auction.

A new Radio Frequency Law will come into force in conjunction with the new Telecommunications Law. Key elements of the Radio Frequency Law include the following:

- a requirement that individuals and organizations using radio frequency and radio equipment must have the requisite licenses; and
- the introduction of a maximum license duration of 10 years for the use of terrestrial radio frequency and radio equipment, 15 years for the use of broadband related frequencies, and 20 years for the use of satellite frequencies.

The Radio Frequency law will come into force on 1 July 2010.

3.6. Universal access

Globally, the establishment of an enabling and effective policy and implementation framework for the promotion of universal access is recognized as a vital component of a national ICT development effort, particularly in countries where the majority of the population resides in rural underserved or unserved areas, as in the case of the CLMV countries.

In many countries, the question of how to ensure that the whole population receives or has access to services was in the past achieved through imposing universal obligations on national operators. Today, in multi-operator markets, rather than burden one provider with uneconomic obligations, many countries are seeking mechanisms that more fairly distribute the cost across the sector and distort the market less. The establishment of universal access funds, for example, has led to the establishment of dedicated institutions that deal with the disbursement of government funds and mandatory operator contributions earmarked for the support of universal access to ICTs. Other mechanisms that have been introduced include private-public sector partnerships that are aimed at extending ICT access through collaboration.

The presence of multiple operators in the telecommunications markets of the CLMV countries represents a resource that could be tapped into further in the national effort to achieve national ICT universal access goals. Developing operational universal service or universal access frameworks and initiatives which would coexist with competitive markets may achieve significant benefits for underserved parts of the population in the CLMV sub-region.

A summary of the status of universal access frameworks for the CLMV countries is highlighted in Table 3.11 below.

Table 3.11 Universal Access

Country	Status
Cambodia	<ul style="list-style-type: none"> • No universal access framework • Use of public-private sector partnerships
Lao PDR	<ul style="list-style-type: none"> • Universal access framework under the Telecommunications Act 2001 adopted but not implemented
Myanmar	<ul style="list-style-type: none"> • No universal access framework adopted • Limited public-private sector initiatives undertaken
Viet Nam	<ul style="list-style-type: none"> • Viet Nam Public Utility Telecoms Fund (VTF) used to support public-private sector universal access initiatives

Cambodia

At the present time, no formal universal access or universal service regime has been put into place although work on one has been ongoing following assistance by the ITU in 2006. The new draft Telecommunications Law, however, envisages the establishment of a universal access framework that will be overseen by the new regulator.

Despite the absence of a universal service regime, the MPTC has embarked on a number of public-private partnership initiatives aimed at improving access to ICT services in rural unserved and underserved areas. Supported by funding from the World Bank, it has recently entered into the implementation phase of the Improved Access to Communications in Rural Cambodia Project (IACRP) which aims to bring basic voice telephony services to low income families in specified unserved and underserved rural areas in four provinces in northern and northwestern Cambodia. The MPTC intends to apply part of these funds to engage a service provider to undertake the provision of those services. As a condition of the award, the service provider is expected to provide public access points that will be accessible to 80 per cent of the residents in the target locations. The service provider must also offer additional services such as basic data and Internet access.

Lao PDR

In Article 14.7, the 2001 Telecommunications Act sets out a general obligation on operators to assure “universal services” to customers. However, no formal policies or specific objectives have yet been defined for universal service or access. Currently, operators are not under any obligation to expand their networks or to extend the provision of services to rural underserved and unserved areas.

Article 5 of the Act also provides for the establishment of a telecommunications development fund (TDF) for the progressive development of a telecommunication system through the pooling

of government resources, contributions by foreign aid donor agencies, and a share of the revenue generated by the provision of telecommunications services. The establishment of the TDF has also been highlighted as a key action item in the Telecommunications Sector Policy of 2004 and in subsequent revisions. At present, however, the TDF has not been established.

Myanmar

At present, in Myanmar the revenues of the operator, MPT, are credited to the government and all projects are funded from the consolidated fund.

In the area of ICT dissemination, Myanmar Info-Tech has embarked on a programme to establish Public Access Centers (PACs) in different areas of the country in order to provide schools, local enterprises and local organizations access to telecommunications services and the Internet. From its launch in November 2005, the number of sites established has reached 554 as at June 2009.

Viet Nam

In November 2004, the Government of Viet Nam issued a decree establishing the Viet Nam Public Utility Telecoms Fund (VTF) to support and provide public utility telecoms services. Following initial funding by the Government, the VTF is now supported through mandatory contributions by operators and from voluntary support by donors. Operators are mandated by regulations to contribute around 5 per cent of their annual revenue to the fund, depending on the type of telecommunications service they are licensed to provide.

Since its establishment, the VTF has been a key partner in the implementation and funding of a number of initiatives. Recently, it completed a nationwide pilot project aimed at the “Improvement of Computer Usage and Public Internet Access Ability in Viet Nam”. Supported by funding from the Bill and Melinda Gates Foundation, the pilot project established 99 public access points (computers with broadband access) in rural areas. It involved the installation of equipment and the provision of computer and Internet skills training to locals. Public access points include cultural post offices, provincial and district libraries, and school and hospital libraries. The pilot project is a test bed to gain experience for a larger nationwide project that will be implemented over the next five years (2010-2015) through the VTF.

3.7.Cybersecurity

While the use of ICT globally has become more widespread, the risks and dangers associated with its use have also similarly increased. Cybercrimes such as phishing, spam, computer-related fraud and other similar offences are rapidly increasing and evolving in step with the development and adoption of new ICT services. Incidents involving cyberattacks such as denial of service attacks against national and international networks have also been on the rise leading to national efforts to protect critical ICT infrastructures.

In response to this situation, an increased emphasis on enhancing cybersecurity is being placed in all countries. While cybersecurity is a shared responsibility of government, the private sector and individuals alike, only national governments are in a position to lead a collective national cybersecurity effort. Such an effort typically involves a number of elements that most importantly include: (i) a comprehensive national cybersecurity policy, (ii) a formal coordination mechanism that divide cybersecurity responsibilities, (iii) a legal cybersecurity framework, (iv) cybersecurity early warning and monitoring facilities, and (v) the promotion of cybersecurity capacity building and awareness.

Recognizing the leadership role they have to play, the governments in the CLMV countries have taken progressive steps in the area of cybersecurity. They have commenced delegating cybersecurity responsibilities, adopting cyber security related policies, laws and procedures (such as those protecting the use of online transactions) and establishing key cybersecurity institutions, such as Computer Emergency Response Teams (CERTs). A summary of the sub-region’s cybersecurity status is set out in Table 3.12 below.

The cybersecurity frameworks established in the sub-region vary in terms of the level of development. Notwithstanding, the existing efforts already in place, there still remains considerable scope for the reinforcement of cybersecurity frameworks in the CLMV countries. For example:

- CLMV governments could introduce comprehensive and holistic national cybersecurity policies that detail cybersecurity priorities and organize cybersecurity responsibilities among government departments ;
- to varying degrees, the cybersecurity legal framework may need to be refined to address key issues such as the investigation and the prosecution of cybercrimes; and
- in general, there exists further scope to improve public-private sector partnerships to improve cybersecurity capacity building and public awareness.

Table 3.12 Cybersecurity

Country	Status
Cambodia	<ul style="list-style-type: none"> • NiDA acts as the national cybersecurity coordinating agency • Establishment of a PKI system, government GCIO and cybersecurity training accreditation scheme • National CERT – camCERT – established in 2008
Lao PDR	<ul style="list-style-type: none"> • Cybersecurity efforts led by Prime Minister’s Office • National CERT currently being established
Myanmar	<ul style="list-style-type: none"> • National cybersecurity effort led by MPCT and the national e-Task Force • National CERT established in 2004
Viet Nam	<ul style="list-style-type: none"> • Cybersecurity responsibility divided between MIC and Ministry for Public Security • National CERT established under MIC • Numerous cybersecurity capacity and awareness building initiatives launched

Cambodia

The National Information and Communication Technology Development Agency (NiDA) leads national efforts in the area of cybersecurity. As part of the National ICT Policy implemented in 2006, NiDa has embarked on a concerted effort to improve national cybersecurity capacity. Assisted by foreign donors, this process has involved a number of elements:

- the adoption of a Government Information Security Measures Standard (GISMS) based on the ISO/IEC27001 standard to ensure the security of government IT operations, to ensure administrative continuity and to minimize the risk of damage from cyber attacks;
- the establishment of a Public Key Infrastructure (PKI) system;
- the creation of a Government Chief Information Office (GCIO) that centralizes ICT operations; and
- the implementation of an IT Engineers Examination (ITEE) accreditation scheme to improve the pool of cybersecurity human resources.

A national cybersecurity early warning, monitoring and response facility, CamCERT, was launched in November 2008 under the supervision of NiDa.

In the area of legislation, the Ministry of Commerce is currently in the process of drafting a law on e-commerce law designed to encourage the use of reliable forms of electronic commerce, promote public confidence in the authenticity, integrity, and reliability of electronic communications, and prevent harmful conduct against computer data and information systems.

Lao PDR

In Lao PDR, national cybersecurity efforts are led by the Prime Minister's Office and implemented by the NAPT, the Ministry of Public Security and the Department of Science and Technology in the Science, Technology and Environment Agency.

Apart from a regulation dealing issued by the Ministry of Public Security on Internet use and security in 2002, there are few policies and regulations in place that deal with the issue of cybersecurity.

Work, however, is ongoing with the drafting of an e-commerce law with assistance from the World Bank. There are also plans to formulate and enact a legal framework against cybercrimes.

Efforts to establish a national CERT are also underway.

Myanmar

In Myanmar, national cybersecurity efforts are led by the MPCT as well as the national e-Task Force. As part of its work, the national e-Task Force established a national cybersecurity early warning, monitoring and response facility, mmCERT, in 2004. Plans to establish a coordination center to provide technical assistance to Internet users on the issue of cybercrimes have also been developed. In 2007, the Myanmar police force formed a specialized unit to deal with crimes involving ICT.

As part of the national cybersecurity effort, the Myanmar Computer Federation also organizes regular seminars and workshops on cybersecurity issues.

In the area of legislation, an Electronic Transaction Law was passed in 2004 to establish a framework for safe online transactions. A Wide Area Network Order (Notification No. 3/2002) issued in 2002 deals with the operation of the Internet in Myanmar and the prohibition of illegal acts relating to the national network.

Viet Nam

In Viet Nam, national cybersecurity efforts are divided between the MIC and the Ministry for Public Security. The MIC leads in the areas of cybersecurity policy-making, the promotion of public awareness, cyber security incident response coordination, and acts as a national point of contact with overseas cybersecurity related organizations. A national CERT, VNCERT, has been established under the MIC.

The Ministry for Public Security deals with cybercrimes and investigations into cybercrime incidents.

A number of programmes and initiatives have been conducted by the Government in the area of cybersecurity, recent and recurrent events include:

- an annual “Information Security Day” organized by VNCERT and the Viet Nam Information Security Association (VNISA);
- an annual “Security World” event organized by the International Data Group (IDG), VNCERT (MIC) and the General Department of Technology of the Ministry of Public Security; and
- an annual “Chief Security Officer Conference and Award” organized by IDG, VNCERT (MIC) and Department of Information and Communications of Ho Chi Minh City.

In the area of legislation and regulation, a number of documents exist on the issue of cybersecurity. These include, in particular, the Electronic Transaction Law (29 November 2005) that regulates electronic transactions, the Law on Information Technology (29 June 2006) on spam, viruses and malware, Decree 90/2008/ND-CP (12 August 2008) on spam over SMS and email, Decree No. 26/2007/ND-CP (15 February 2007) providing in detail the implementation of the Law on electronic transactions on digital signatures ..., Decree No. 63/2007/ND-CP (10 April 2007) providing for sanctioning of administrative violations in the domain of information technology, and Decree No. 97/2008/ND-CP (28 August 2008) on the Management, provision and use of internet services and electronic information on the Internet

Currently, further directives on cybersecurity are being contemplated with ongoing work being conducted in particular on the area of cybercrimes which existing laws do not yet address.

A project to develop a National Framework for Digital Information Security to 2020 by the Institute of Information and Communications Strategy (NIICS) and VNCERT is currently ongoing.

4. Measures for consideration and conclusions

In order to develop and maintain an enabling environment for continued ICT development, decision-makers in the CLMV countries will have to make a concerted effort to evolve alongside the changes ICT development itself brings about. As the ICT sector of a country develops, so must its policy, legal and regulatory framework in order to cope with the increasing complexities brought about by the entry of more operators, the introduction of new subscribers and a rise in the number of consumers.

From the discussion above, it is clear that each country in the CLMV region will follow its own pace and style of development. To that end, a range of measures for consideration are outlined below in order to cater to the different challenges raised. These measures are based on best international practices in the area of ICT policy, law and regulation that have been reflected in international declarations such as the GSR Best Practice Guidelines on Innovative Regulatory Approaches that was adopted by the Global Symposium for Regulators (GSR) in November 2009.⁵

Apart from national measures, significant benefits can be realized from pursuing greater institutional cooperation and the wider pooling of resources given the interconnectedness of the sub-region in aspects beyond ICT. To that end collective measures for consideration have been given in the final sub-section below.

4.1. National measures for consideration

4.1.1. Policy framework

All of the CLMV countries would benefit if they were to **accelerate the preparation and formal adoption of a national ICT and telecommunications policy**. Nevertheless, while it is important to have a national ICT and telecommunications policy in place, it is also important to **ensure that the objectives described in them remain relevant, achievable, and sufficiently defined** to be of practical value to law-makers, regulators, operators and investors. International best practice in the adoption process of a national policy typically involves extensive stakeholder consultation.

4.1.2. Trade and telecommunications

CLMV countries which have made WTO market access commitments might consider deepening efforts to **ensure that laws and regulations are in compliance with WTO commitments they have given**. This can be facilitated instituting regular periodic compliance reviews by the regulator or the relevant responsible Ministry.

CLMV countries which have not made significant market access trade commitments might consider nevertheless the advantages if they were to **bring laws and regulations in line with more liberal market access commitments (as well as with the WTO Agreement on Basic Services and its Reference Paper)**. Such an approach would facilitate, for example, the WTO accession processes in the case of Lao PDR, and AFTA integration in general.

⁵ See <http://www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR09/consultation.html>.

4.1.3. Legislative framework

In order to improve legal certainty necessary to attract long term investment in substantial ICT infrastructure, CLMV countries might decide to **expedite the passage of new telecommunications laws** where such a process is in progress.

In all cases it is nevertheless important to ensure that the telecommunications legislation that will enter into force remains relevant to the current telecommunications environment. Given the converged nature of telecommunications, in particular, it would be important to **provide for a converged legislative framework** that will enable a converged approach to ICT sector regulation.

4.1.4. Institutional framework

All of the CLMV countries might consider the benefits of carrying out a comprehensive review of the national institutional framework in order to **clarify legal responsibilities and mandates, reorient institutional mandates to reflect convergence, and reinforce regulatory independence or autonomy.**

Such a review may lead to the reorganization of ICT sector responsibilities and the reinforcement of the legal mandate of the relevant institutions through the promulgation of the necessary laws.

4.1.5. Regulatory framework

4.1.5.1. *Licensing and market entry*

The sub-region's countries would each benefit from reviewing licensing procedures within the framework of existing or pending legislation. The aim of such a review might be to **adopt a transparent, simple and standardized licensing process** in a manner so as to **take into account of the increasingly converged nature of the ICT sector.**

4.1.5.2. *Competition policy*

Substantial advantages are open to CLMV countries if they were to **introduce a competition policy regime** within the framework of existing or pending legislation. As competition policy approaches can vary widely in terms of complexity, it will be important to consider a competition policy regime that is suited to the available resources the ICT regulators currently have at hand.

4.1.5.3. *Interconnection and access*

Reviewing the need for interconnection regulation taking into account competition policy principles would significantly strengthen the regulatory regimes. In this context CLMV countries might consider whether to **introduce asymmetrical interconnection obligations** (i.e., where providers with SMP are regulated more carefully than those without) might be considered. Examples of such asymmetric regulation could include imposing mandatory interconnection terms and conditions on SMP providers, or requiring them to maintain a Reference Interconnection Offer (RIO) for other providers. Given the contentiousness of interconnection and access, CLMV countries might consider the benefits if they were to **establish detailed interconnection dispute resolution mechanisms.**

4.1.5.4. Infrastructure sharing

Possible avenues for infrastructure sharing among operators in the different market segments could be examined with a view towards **adopting appropriate infrastructure sharing regulations** to encourage its practice.

4.1.5.5. Retail price regulation

Given the intrusive nature of retail pricing regulation, the adoption of a retail price regulation regime would ideally be **considered in the context of the introduction of a competition policy regime**.

4.1.5.6. Spectrum management

There is currently scope for the **adoption of clear spectrum management regulations** in the countries where they are absent. The promulgation of such regulations would benefit from a thorough **examination of the current and future spectrum needs and demands** of the country concerned. As a highly technical topic, support in the form of training and external advice will also assist greatly in the development of the requisite regulations.

4.1.6. Universal access

The **establishment of a universal access fund and a fund administrator, or the initiation of public-private sector partnership programmes** could be initiated in countries where such institutions do not currently exist. The timely introduction of such an alternative would assist in shifting part of the financial burden of promoting universal access from the government to the private sector without a significant distortion to the market. Such an initiative, however, would require an examination of the current laws in force and the promulgation of the necessary regulations.

4.1.7. Cybersecurity

A **review of the current national cybersecurity framework** that is in place in each country may be undertaken with a view towards ensuring that the key elements of a national cybersecurity framework are in place. Such a review could leverage on the cybersecurity resources put in place by the ITU, such as the ITU Cybersecurity Guide for Developing Countries.⁶

⁶ For a complete list of ITU resources on cybersecurity, please see <http://www.itu.int/cybersecurity/>

4.2. Collective measures for consideration

Although many factors differentiate the CLMV countries from one another, considerable benefit can still be found by making a collective effort to move forward as a group. Given the challenges and the recommendations outlined in the sections above, a number of collective measures can be taken by the sub-region to address them. These include:

- Increasing the capacity of the relevant ICT institutions in the areas of policy, legislation and regulation by:
 - supporting training (online and offline) on key ICT development issues with the support of organizations such as the ITU and the World Bank
 - organizing regional conferences, workshops and other forums that discuss areas involving ICT policy, legal and regulatory enablers
- Initiating a study on the possibility of the harmonization of ICT regulation on a sub-regional level with a view towards the pooling of regulatory resources and the promotion of both foreign and regional cross-border investments.
- Promoting inter-regional ICT policy and regulatory cooperation in the form of peer to peer exchanges (e.g. regulator exchanges)
- Conducting joint readiness exercises and peer reviews in the area of cybersecurity