

# **PINOY INTERNET: PHILIPPINES CASE STUDY**



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This report has been written by Michael Minges, Esperanza Magpantay, Lucy Firth and Tim Kelly of the International Telecommunication Union (ITU). The report is based on field research carried out between 1 – 5 October 2001 as well as articles and publications sourced in the document. The National Telecommunications Commission provided incalculable support; without their assistance, this report would not have been possible. Equally, the report would not have been possible without the cooperation of the many from the Filipino public and private ICT sector who offered their time to the report's authors. The kind hospitality of Philippine Electronics and Telecommunications Federation (PETEF) is also acknowledged. We would also like to thank N. Santiago of Globe and A. Bengzon, Undersecretary for Communications, for their insightful comments. The report is one of a series of case studies examining the Internet in South East Asia carried out in 2001. Additional information is available on the ITU's Internet Case Study web page at <http://www.itu.int/ITU-D/ict/cs/>.

The report may not necessarily reflect the opinions of the ITU, its members or the government of the Republic of the Philippines.

The title refers to the Filipino (Tagalog) word "Pinoy" meaning 'Filipinos by Heart.' The SMS message appearing on the mobile phone screen ("Kmusta txt k nman") is also in Tagalog and means 'Hello, can you send me a text message'.

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## 1. Country background

### 1.1 Overview

The Republic of the Philippines, with an area of approximately 300'000 square kilometres, is located in South East Asia, between mainland Asia and Australia. It is surrounded by the South China Sea on the west, the Pacific Ocean on the east, the Sulu and Celebes Seas in the south and the Bashi Channel in the north. The Philippines's 7'107 islands form one of the largest archipelagos in the world. Of these islands, only 2'773 have been named. The three major island groups are Luzon, Visayas and Mindanao. The Philippines is divided into 16 regions, 78 provinces, 96 cities, 1'513 municipalities and 41'943 barangays.<sup>1</sup>

The country has a diverse topography, including high mountains and volcanic formations, extensive valleys and plateaus interspersed with rivers and lakes. Some 53 per cent of the country's total land area is forest and woodland. The Philippines has a tropical climate with two pronounced seasons, rainy from June to November and dry from December to May. The country is situated within a cyclone belt and is hit by numerous tropical storms every year.

### 1.2 Demography

The 2000 Census of Population and Housing showed a population of

Figure 1.1: Map of The Philippines



Source: The World Factbook.

76.5 million people. The capital, the city of Manila, has 1.6 million inhabitants and is the most densely populated area. The National Capital Region, consisting of the capital and surrounding urban agglomeration, is home to some ten million people (or

13 per cent of the population). Rural and urban population in the country are split evenly. The annual average population growth rate between 1995 and 2000 was 2.4 per cent. The country's 15.3 million households averaged five members in 2000. In 1999 it was estimated that 37 per cent of the population was under the age of 15, 59 per cent between 15 and 64 years and only four per cent of the population is 65 years or older. Although there are an estimated 111 linguistic groups, there are two official languages, Filipino (which is based on Tagalog) and English. English is the official language used in business and government dealings. The majority of Filipinos speak one of eight major dialects, namely Tagalog, Cebuano, Ilocano, Hiligaynon or Ilonggo, Bicol, Waray, Pampango, and Pangasinense.

The majority of Filipinos, some 95 per cent, are of Malay descent. Ethnic minorities include people of Spanish and Chinese descent. A major heritage of Spanish colonialism is the country's religion. Some 84 per cent of the Filipinos are Roman Catholics. Some ten per cent are Protestants or part of another Christian religion and around five per cent are Muslims.

### 1.3 Economy

At the end of 2000, GDP at current prices amounted to 3'302'589 million pesos (US\$64'127 million), with GDP per capita amounting to 42'112 pesos (US\$817). Services accounted to more than half of the country's GDP, industry 31 per cent and agriculture 16 per cent. Due to the spill-over of the Asian financial crisis, the economy sharply deteriorated in 1998. GDP dropped by almost 0.6 per cent that year but has since recovered and grew 3.3 per cent in 1999. The country experienced a rise in the value of output until the end of 2000 but due to the sudden change in the administration, and political unrest in the country, the first two semesters of 2001 again showed a decrease in GDP growth (see Figure 1.2).

Top exports are electronics and components (46 per cent) and textiles

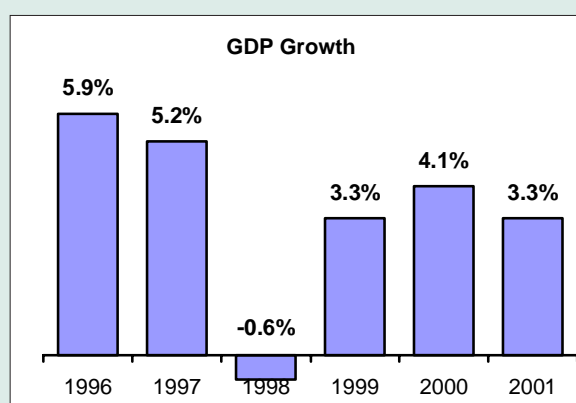
**Table 1.1: Population Indicators, 1990-2000**

	1990	1995	2000
Total Population	60'703'000	68'616'000	76'499'000
Male	30'538	34'584	n.a.
Female	30'165	34'032	n.a.
Annual average growth rate (%)	2.35	2.34	2.36
Average household size	5.3	5.1	5.0
<b>Density (persons/km<sup>2</sup>)</b>			
Philippines	202	229	255
Manila	65'049	66'190	41'282

Source: National Statistics Office.

(ten per cent). According to the United Nation Development Programme's (UNDP) Human Development Report 2001, the Philippines ranked 22<sup>nd</sup> out of the 30 leading exporters of high-tech products in the global market. The inflation rate in April 2001 was 6.7 per cent compared to 3.7 per cent in April 2000. The unemployment rate stood at 10.1 in July 2001, three points lower than April 2001 (13.3 per cent). Outstanding external debt amounted to US\$ 55.5 billion at the end of 2000.

**Figure 1.2: GDP change over previous year**



Source: National Statistical Coordination Board.

**Table 1.2: Human Development Indicators**

Philippines compared to other South East Asia economies, 1999

HDI Rank	Economy	Life expectancy at birth (years)	Adult literacy rate (%)	Combined school gross enrolment ratio (%)	GDP per capita (PPP US\$)
26	Singapore	77.4	92.1	75	20'767
32	Brunei Darussalam	75.7	91.0	76	17'868
56	Malaysia	72.2	87.0	66	8,209
66	Thailand	69.9	95.3	60	6,132
<b>70</b>	<b>Philippines</b>	<b>69.0</b>	<b>95.1</b>	<b>82</b>	<b>3,805</b>
101	Viet Nam	67.8	93.1	67	1,860
102	Indonesia	65.8	86.3	65	2,857
121	Cambodia	56.4	68.2	62	1,361
131	Lao Peoples Dem. Rep.	53.1	47.3	58	1,471
118	Myanmar	56.0	84.4	55	1'027

Source: United Nations Development Programme, Human Development Report 2001.

#### 1.4 Human development

According to UNDP's Human Development Report 2001 the Philippines ranks 70<sup>th</sup> out of 162 countries in the Human Development Index (HDI), placing the country in the upper third of the medium human development category. The Philippines achieves a relatively higher ranking in terms of human development than its GDP would suggest. The HDI is composed of a basket of indicators including life expectancy at birth, adult literacy, school enrolment and GDP per capita. Table 1.2 shows that HDI varies greatly in the South East Asia region and that the Philippines ranks fifth among its nine neighbours. It is interesting to note that the country has by far the highest school gross enrolment ratio (82 per cent) and the second highest adult literacy rate (95.1 per cent).<sup>2</sup>

#### 1.5 Recent history

In 1521, Ferdinand Magellan arrived in the Philippines and claimed the archipelago for the King of Spain. The

Spanish named the land 'Filipinas', after Philip II of Spain. For over 300 years, the Philippines was a colony of the Spanish crown. In 1898, the territory was ceded by Spain to the United States, following the Spanish-American war. Following Japanese occupation during World War II, the Philippines gained full independence in 1946. Ferdinand Marcos was elected president in 1965, and remained in power for 21 years. He fled the country in 1986 when Corazon Aquino called on 'People Power', a non-violent resistance to Marcos' government. A new Constitution was ratified in February 1987. Aquino faced many challenges, including economic problems, opposition from certain Filipino elite and hostile military. After seven coups in six years, Aquino was succeeded by the Minister of Defence Fidel Ramos in 1992. In 1998, Joseph Estrada replaced him. Only two years later Estrada was impeached on charges of corruption and mass demonstrations (People Power II) eventually forced him to resign in January 2001. Vice-president Gloria Arroyo, the second woman to take over as president of the Philippines, succeeded him.

<sup>1</sup> *Source:* National Statistical Coordination Board. *Barangay* is the basic unit of the Philippine political system and consists of not less than 1'000 inhabitants residing within the territorial limit of a city or municipality and administered by a set of elective officials headed by a barangay chairman.

<sup>2</sup> These figures are misleading and symptomatic of the confusing statistics plaguing the Philippines. For example, the figure for literacy does not refer to functional literacy (84 per cent). Also the last national literacy survey was carried out as long ago as 1994. Therefore, the source of the UNDP statistics is questionable. The school enrolment figure also does not seem consistent with national statistics. Participation rates reported by the National Statistical Office for School Year 1999-2000 are: elementary 97.0 per cent; secondary 65.4 per cent, and tertiary 23.9 per cent. A weighted average results in a figure of 64 per cent and not 82 as reported by UNDP. See "A View of the Philippines" on the NSCB web site at: <http://www.nscb.gov.ph/view/people.htm>.



## 2. Telecommunications and Mass Media

### 2.1 Telecommunications

The Philippine telecommunication market is distinctive in a number of ways. First, it is one of the few countries in the world where telecommunication services have historically been operated by private entities. Second is the innovative regulatory requirement laid out in the mid-1990s that called for mobile and international telecommunication operators to install a specific number of fixed lines. This was seen as a way of balancing lucrative opportunities in the international market against the supposedly less profitable requirements to roll-out lines outside the main population centres. Third is the explosive growth of mobile, making the nation among the first where mobiles surpassed fixed telephone lines. In particular, Filipinos have shown themselves to be world champions in the use of Short

Message Service (SMS), or “txtting” (see boxes 2.1 and 3.2).

As Figure 2.1 shows, the results have generally been positive. The Philippines has outperformed the rest of the ASEAN region in terms of its fixed-line network for every year between 1992 (before the policy began) and 2000 (by which time fixed-mobile substitution was having a negative effect on further fixed-line growth). Similarly, mobile growth, which peaked in 1995, has also been higher in the Philippines on a consistent basis since 1992. There has been a notable upturn in mobile growth since 1998. Part of this reflects the rebound from the 1997 financial crisis, which occurred much faster in the Philippines than elsewhere in the region. But it also reflects the beneficial impact of pre-paid tariff packages.

### Box 2.1: The demand for mobile messaging: SMS

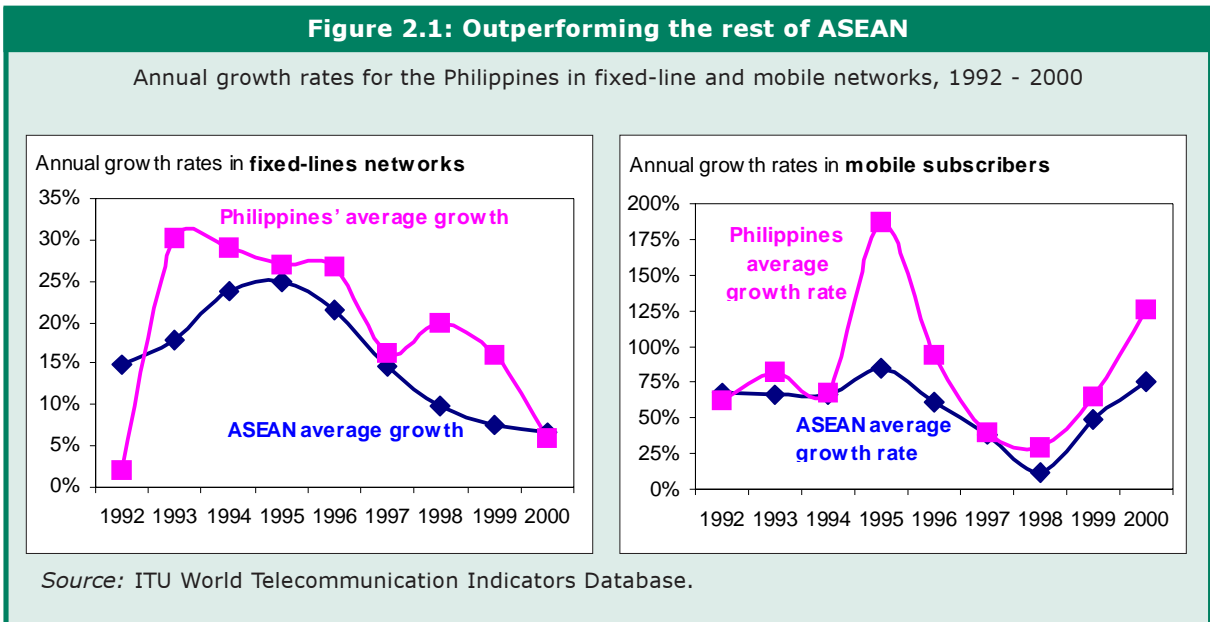
SMS, or Short Messaging Service, is one of those serendipitous applications that are discovered almost by accident. The capability to send some 160 or so characters of data (barely a kilobit) was included in the original specification of the GSM digital mobile standard that was developed in the 1980s and implemented from 1991 onwards. But it was never considered to be a viable application for which customers would pay. After all, compared with sending e-mail from a computer, why would anyone want the inconvenience of having to make several keystrokes to create each letter or restrict themselves to such short messages? Consequently, in the early years of GSM, SMS was given away free of charge.

The European engineers who defined the GSM standard did not imagine that their throwaway service would find its apotheosis in the Philippines. Around Christmas 2001, the volume of messages there reached around 90 million per day, or around ten for each user, creating a considerable source of

revenues for the Philippines’ two main mobile operators, Smart and Globe.

Why did it take off? Part of the reason has to do with the way it was charged. A number of free SMS messages were included in each prepaid subscription. The popularity of SMS is partly due to the fact that a user can send around eight SMS for the price of one minute of voice call and the price is independent of distance (until recently, there was no surcharge for sending SMS overseas, where many Filipinos work). In addition, mobile users can receive messages from Internet users and, of course, use SMS to download the ubiquitous ring tones.

SMS played an important part in recent Filipino history. When President “Erap” Estrada refused to stand down, even after being implicated in a corruption scandal, Filipinos used SMS to coordinate the demonstrations that eventually led to his downfall; so-called “People Power II”.



**2.1.1 Policy and regulatory: Private ownership preferred**

The **Department of Transportation and Communications** (DOTC, <[www.dotc.gov.ph](http://www.dotc.gov.ph)>) is the ministry responsible for telecommunication policy in the Philippines. The **National Telecommunications Commission** (NTC, <[www.ntc.gov.ph](http://www.ntc.gov.ph)>) is the industry regulator. The NTC was created in July 1979 by Executive Order No. 546 when it took over from the former Board of Communications and the Telecommunications Control Bureau. This makes the NTC one of the oldest telecommunication regulators in the world. Although the NTC is an agency of the DOTC, its legal decisions can only be appealed to the Supreme Court. The NTC has three commissioners appointed by the President.

Republic Act No. 7925, "*Public Telecommunications Policy Act of the Philippines*" passed in March 1995, is the main legislation for the telecommunication sector.<sup>3</sup> The NTC is expected to ensure that the policies laid out in the Act are implemented. The law sets out the duties and obligations of public telecommunication operators as well as

interconnection rules. The Act endorses the policy of private ownership, instructs the government to sell remaining publicly held telecommunication assets and also calls for operators to list up to 30 per cent of their shares to encourage citizen ownership. It also entrusts the NTC with the right to establish tariffs for telecommunication services.

The present Philippine telecommunication market is one of the most competitive in the world with five companies providing mobile cellular services, eleven international gateway providers and at least two operators theoretically allowed to provide fixed service in each region across the country. Market entry is however constrained due to policy and technical reasons and apart from the Value-Added-Service segment; no new operators have been authorized over the last five years (see Table 2.1). On the policy front, there is a feeling that there are enough operators considering the level of development of the market. Some operators are losing money and if anything, there is a belief that market consolidation rather than more liberalization is needed. Indeed, consolidation is already starting to occur. Technically, there

**Table 2.1: Telecommunication Industry Structure**

<i>Number of licenses, by category</i>				
<b>Telecom Service</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
Local Exchange Carrier Service	76	76	76	77
Cellular Mobile Telephone Service	5	5	5	5
Paging Service	15	15	15	15
Public Trunk Repeater Service	10	10	10	10
International Record Carrier	5	5	5	5
Domestic Record Carrier	6	6	6	6
Very Small Aperture Terminal	4	4	4	5
Public Coastal Station	12	12	12	12
Radiotelephone	5	5	5	5
Value-Added Service	47	70	106	156

*Source: NTC.*

are limits for the mobile market with additional spectrum not available to accommodate new entrants.

The more serious limitation on market growth is the limitation on foreign ownership. The Constitution limits foreign ownership in public utilities to 40 per cent. The incumbent carrier, PLDT, has attempted to raise finance for investment (and to reduce its older debt) by selling chunks of shares to foreign investors. First Pacific of Hongkong owns 24 per cent while a 20 per cent stake of its mobile subsidiary, Smart, is reportedly attracting interest from NTT of Japan, among others. But the fact that these foreign investors could never own or control a Philippines operator reduces the level of interest, and therefore the price. This constraint is particularly acute in segments of the market, like broadband, which are more capital intensive.

Unlike many countries, licenses *per se* are not issued to telecommunication service operators in the Philippines. Operators require a franchise, certificate and approval to provide telecom service. First, a legislative franchise, issued by Congress (parliament) is needed. Second, the NTC must issue a Certificate of Public

Convenience and Necessity. Third, the NTC must also grant authority for operation of the service; these are almost always provisional, generally covering a period of around five years.

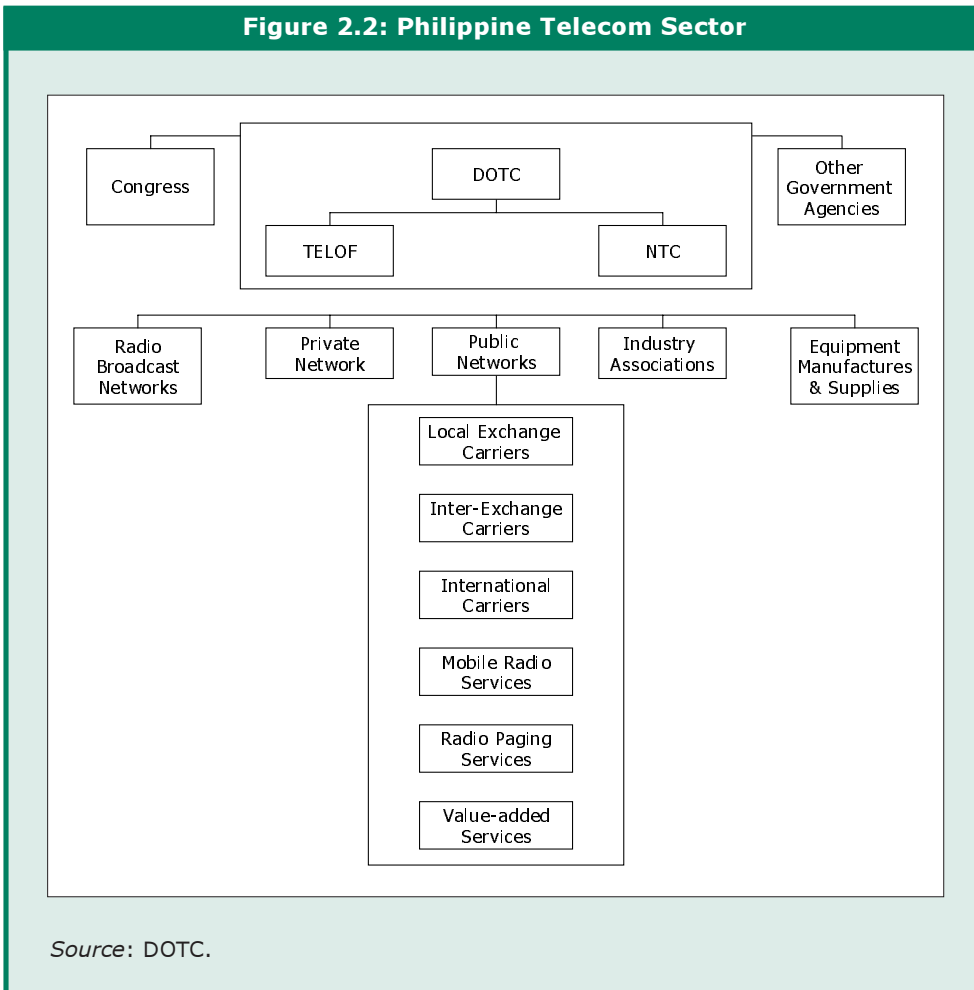
### 2.1.2 Operators

Although there are numerous telecommunication operators in the Philippines, the industry is dominated by several large companies.

The nation's oldest operator is the **Philippine Long Distance Telephone Company (PLDT)**, <[www.pldt.com.ph](http://www.pldt.com.ph)>. It was incorporated in 1928. Predominately US-held, control reverted to Filipino shareholders in 1967. Its charter was amended in 1991 granting PLDT the right to offer any telecommunication service in the country. PLDT's franchise was also extended until 2028. PLDT is by far the largest operator in the nation. PLDT's foreign owners are Hong Kong's First Pacific with 25 per cent and Japan's NTT with 15 per cent. Remaining shares are traded on the Philippine Stock Exchange.

PLDT also wholly-owns Smart and is majority-owner of Piltel. **Smart** <[www.smart.com.ph](http://www.smart.com.ph)> was set up in 1991 to provide mobile telephone

Figure 2.2: Philippine Telecom Sector



services. It has a 25-year franchise issued in 1992. It was purchased by PLDT in March 2000. **Piltel** was established in 1968 to operate local telephone service in General Santos City. PLDT purchased 32 per cent in 1975 and increased its holdings to 50 per cent in July 1998. Remaining shares were listed on the Philippine Stock Exchange in 1995. Piltel has a 25-year franchise, renewed in 1992. It launched mobile services in 1991 and today operates both AMPS and CDMA networks and leases GSM capacity from Smart.

Bayan Telecommunications Incorporated (**BayanTel**, <[www.bayantel.com.ph](http://www.bayantel.com.ph)>) was established in October 1993. It has majority ownership in several local exchange carriers, in international gateway provider International Communica-

tions Corporation (ICC) and in mobile operator Extelecom. Express Telecom (**Extelecom**) was established in 1988 and launched the country's first mobile cellular service in May 1989. Its owners are Bayantel, Luxembourg-based international cellular operator Millicom, and the Philippine group Mayon Holdings.

Digital Telecommunications Phils., Inc. (**Digitel**, <[www.digitelone.com](http://www.digitelone.com)>) was awarded a 30-year contract in February 1993 to manage and operate the DoTC's telecommunication facilities Luzon Island. In 1992 it gained an international gateway facility license and in February 1994 this was converted into a franchise under the Special Areas Scheme (SAS) to provide nationwide fixed and international telephone service. In August 2000, Digitel was granted a

Provisional Authority to provide mobile cellular services. It is in the process of constructing a GSM 1800 network. Digitel plans a soft launch in 2002 and a hard launch by May 2002.

Eastern Telecommunications Philippines, Inc. (**ETPI**, <[www.etpi.com](http://www.etpi.com)>) provides international telephone services. It has ownership in a number of submarine fibre optic cable systems. The company's roots go back to 1878. It became part of the UK's Imperial and International Communications that later became Cable and Wireless. In October 2000, the forty per cent shareholding of Cable and Wireless was sold to Australian Gigahertz Network.

**Globe Telecom** <[www.globe.com.ph](http://www.globe.com.ph)> emerged from Globe-Mackay Cable and Radio (GMCR), a company set up in 1930 to provide maritime and telegraph services. It received franchises to provide fixed, mobile and international telephone services in the early 1990s and has since emerged as the second largest operator in the country. In June 2001, Globe acquired mobile operator Islacom with the result that Islacom's strategic investor—Germany's Deutsche Telekom—ended up owning part of Globe (4.65 per cent). Globe's other foreign shareholder is Singapore Telecom (11.79 per cent). The Ayala family owns a further eleven per cent. **Islacom** launched a GSM network in 1994 and also operates main telephone lines.

**Philcom**, **PT&T** and **Capwire** are linked through holding company Republic Telecommunications (Retelcom). All provide international telecommunication services in addition to local exchange services.

There are also over 50 small local exchange operators, many members of the Philippine Association of Private Telephone Companies (PAPTELCO).

### 2.1.3 Fixed: The EO 109 effect

There were 77 operators providing fixed telephone line service at the end of 2000. Most are provincial operators (PAPTELCO members) that account for

a small portion of lines. The most significant impact on the fixed line market occurred in 1993. That was when then President Fidel Ramos signed Executive Order 109. It called for mobile cellular and international telephone service operators to also provide fixed-line telephone service. Each cellular operator was required to install 400'000 lines and each international operator 300'000 lines within five years. EO 109 enforced compliance by requiring operators to put up performance bonds that could be forfeited if line installation targets were not met. Operators were assigned different regions of the country to ensure even roll-out. In addition, in order to ensure that lines were not only installed in cities, there were targets for the ratio of urban to rural lines. That is, one rural line was to be installed for every ten fixed lines. The EO also explicitly allowed cross-subsidies in order to keep local service rates affordable. This was to be implicitly carried out by operators through their supposedly more lucrative mobile or international operations. In addition, local exchange operators were to receive access fees for use of their networks.

Nine operators were obligated to install fixed telephone lines under EO 109. When all the new lines to be installed were added up, they came to four million or more than quadruple the number that existed at the end of 1993. These were to have been installed by the end of 1998. The implementation of the policy fell short by around 600'000 lines in 1998 but by the end of 2000, the four million target was reached. Some operators exceeded their line installation requirements while others did not complete theirs. One reason put forward by some operators for not accomplishing the target was "peace and order" particularly in the south of the country. Other reasons include permission not being granted by the local authorities as well as the financial crisis.

Although the number of lines called for under EO 109 was eventually installed, the majority are not in

**Table 2.2: EO 109**

Company	IGF	CMTS	Service Area	Lines required EO 109	Lines installed by 12/98	Lines installed by 12/00	Lines in Service by 12/00	Capacity used
Digitel	1		Luzon	300'000	374'816	611'166	344'368	56%
Globe	1	1	5 & 11	700'000	705'288	790'291	158'249	20%
ICC / BayanTel	1		6	300'000	462'509	466'493	219'082	47%
Islacom	1	1	7 & 8	700'000	455'438	488'531	150'440	31%
Philcom	1		10	300'000	71'334	64'620	38'539	60%
Piltel		1	9	400'000	379'413	463'541	56'967	12%
Capwire / PT&T	1		4	300'000	172'314	190'456	50'678	27%
Smart	1	1	1 & 3	700'000	704'073	866'954	116'992	13%
ETPI	1		2	300'000	71'357	69'085	21'677	31%
<b>Sub-total</b>	<b>8</b>	<b>4</b>		<b>4'000'000</b>	<b>3'396'542</b>	<b>4'011'137</b>	<b>1'156'992</b>	<b>29%</b>
PLDT	1			-	1'629'522	2'623'797	1'701'607	65%
<b>Total</b>	<b>9</b>			<b>4'000'000</b>	<b>5'026'064</b>	<b>6'634'934</b>	<b>2'858'599</b>	<b>43%</b>
Others						271'028	202'788	75%
<b>PHILIPPINES</b>						<b>6'905'962</b>	<b>3'061'387</b>	<b>44%</b>

Note: IGF = International Gateway Facility. CMTS = Cellular Mobile Telephone Service.  
Source: ITU adapted from NTC.

service. The Philippines has one of the world's highest ratios of unused telephone lines. At the end of 2000, only 44 per cent of installed telephone lines were in use, and only 29 per cent among those companies subject to the Special Areas Scheme. A major reason is that lines were installed in places where people could either not afford them or did not want them. Also, subscription charges were not dramatically reduced. Thus EO 109 overlooked one of the principles of Economics 101: an increase in supply should lead to a fall in price. Since this did not happen, and considering the level of economic development, without a fall in prices, the Philippines just did not have the capability to absorb all the new lines.

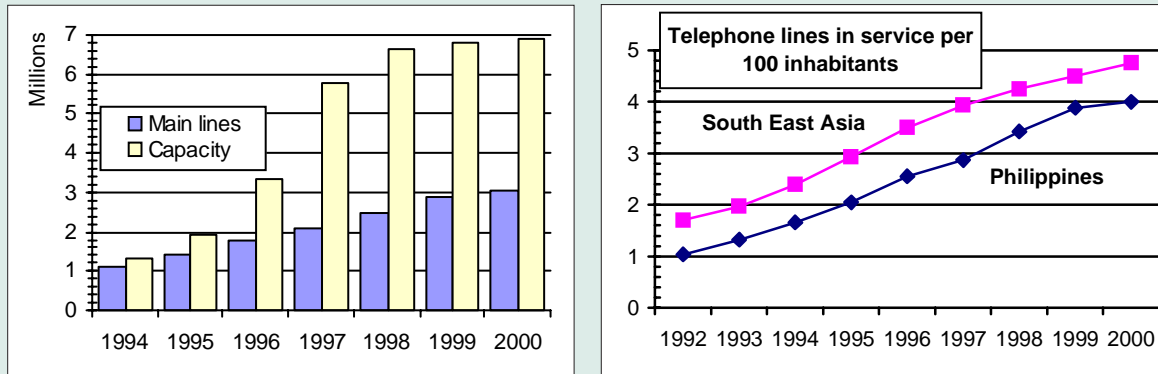
A more significant shortcoming of the EO 109 was the emphasis it put on the fixed-line network, whereas subsequent developments showed that Filipino's appetite was greater for

mobile communications. To be fair, at the time EO 109 was implemented, mobile communications was costly and considered a luxury, even a status symbol. In retrospect, a lighter regulatory burden, which would have opened the market to new players and investors, without dictating the pattern of their investment, may have proved more beneficial. Such a policy might have meant that the market consolidation that has recently taken place would have happened earlier. It may also have encouraged greater price competition.

Nevertheless, despite these shortcomings, the impact that the policy of opening up the market had on fixed-line growth is evident, at least in the mid 1990s (see Figure 2.1). Not only did the policy introduce new investors, it also re-energised the incumbent, PLDT, which still holds more than 55 per cent of local line

**Figure 2.3: So many lines but we still can't catch up**

Fixed lines installed and in use, Philippines and main telephone lines per 100 inhabitants, Philippines and South East Asia



Source: ITU.

subscribers as of 2000. By the mid-1990s, however, when mobile provided a more attractive alternative to fixed-line service, the shortcomings in the policy were more evident. While the Philippines had the highest line installation rate of the region, this did not transform into the biggest gain in lines in service or penetration rate. The Philippines telephone lines in service rate grew by 16.8 per cent a year between 1995 and 2000, a rate surpassed by three other South East Asian Nations (Cambodia, Lao PDR and Vietnam). Indeed the Philippines was not much closer to catching up with the South East Asian average teledensity at the end of EO 109 than it was before.<sup>4</sup> Finally, the explosive growth of mobile was the nail on the coffin for the EO 109 experiment. The popularity of mobile was completely unforeseen at the time EO 109 was designed. One interesting development is how the Philippine fixed line market is now adopting popular mobile features such as text messaging and prepaid service.

Perhaps the main legacy of EO 109 is that it created alternate providers of fixed telephone lines. The fact that the Philippines implemented the policy early on, when teledensity was so low, has resulted in a market with a number of alternative providers to the historical provider, PLDT. As a result, PLDT has

seen its market share (based on lines in service) plummet from 95 per cent in 1992 to just over half (56 per cent) by 2000. While many countries are struggling to attract competition in their fixed line markets, the Philippines already has it.

#### 2.1.4 Long distance

There are three nationwide terrestrial backbones. PLDT has a nationwide fibre optic network as well as a digital microwave network for backup. In 1999, the Telecommunication Infrastructure Corporation of the Philippines (**TelicPhil**), a consortium of seven telecom operators, completed a nationwide fibre optic network. There are also several satellite networks with nationwide coverage utilizing VSAT (Very Small Aperture Terminals) antennae for the ground segment. Despite increasing competition, PLDT remains the largest national long distance operator. It carried 3.3 billion minutes in 2000. National long distance accounted for 17 per cent of PLDT's revenues in 2000 or 10.6 billion pesos (US\$ 210 million). In May 2001, PLDT reduced prices to a flat 3.00 pesos (US\$ 0.06) per minute rate for any national long distance call within its network and 3.50–5.00 pesos (US\$ 0.07–0.10) for calls terminating in other networks.



**2.1.5 International**

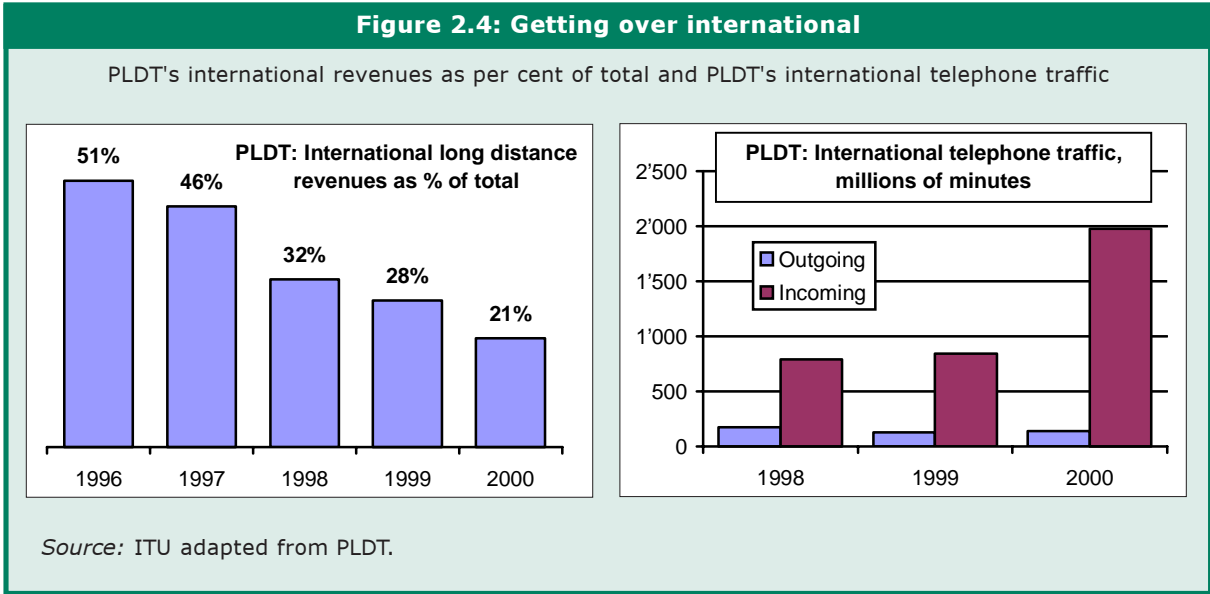
As recently as five years ago, international telephone service was perceived as a lucrative market segment. The 8 million or so Filipinos working outside the home country are eager to stay in touch with friends and family, providing a huge potential market.<sup>5</sup> A number of new carriers were willing to take on fixed line installation obligations in order to obtain the right to provide international telephone service. But pressure by the US to reduce settlement rates, IP Telephony and alternative routing of calls have made the international gateway business much less attractive than at the time the licenses were awarded.

In its so-called Benchmark Order, the US regulator, the FCC, had ordered the Philippines to reduce its settlement rate to US\$ 0.19 by January 2001, a step the Philippines carried out a year in advance. By doing so, the Philippines hoped to stem the large rise in illegal accounting rate bypass traffic. International prices have dropped sharply over the last few years and now stand at a flat US\$ 0.40 to any destination. Although this sounds attractive, what it really means is that low cost traffic to the US is being used to cross-subsidise the cost of outgoing traffic to other higher cost

destinations where there are lots of Filipino workers, such as in the Arab States. This is perhaps one unintended outcome of the NTC's relaxed attitude to price cross-subsidy between market segments. The difference between the settlement rate to the US of 19 US\$ cents and the retail rate of 40 US\$ cents still leaves plenty of scope for arbitrage. Consequently, PLDT's international incoming traffic jumped by over 100 per cent in 2000 while outgoing traffic has actually fallen since 1998. As a result of these price reductions, and because PLDT's rates have been matched by every other carrier in the market, leading to a loss of market share, PLDT has seen its international revenue decline from just over 50 per cent of total revenues in 1996 to 21 per cent in 2000 (see Figure 2.4).

**2.1.6 Mobile**

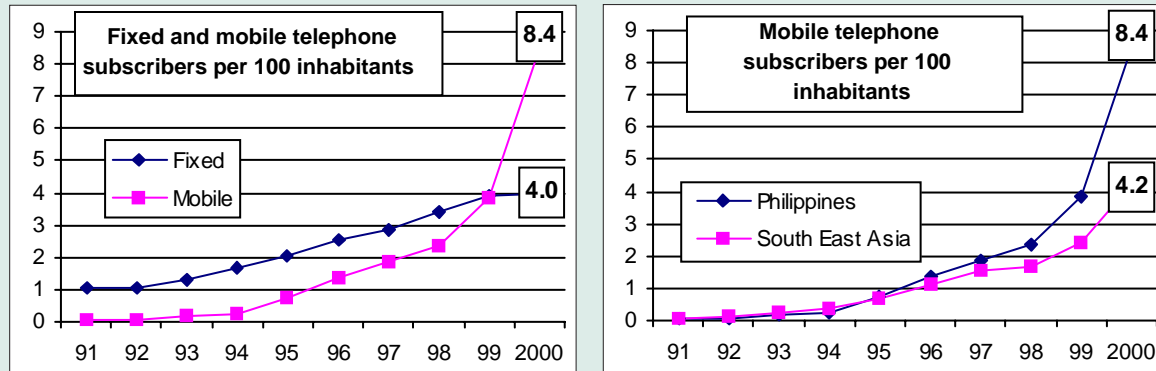
Technically, the Filipino mobile cellular market is diverse with five companies operating seven networks (AMPS (2), CDMA, TACS, GSM (3)). In reality, the market is dominated by two players (PLDT and Globe) and one technology (GSM). PLDT wholly-owns Smart and majority-owns Piltel while Globe recently purchased Islacom. These two companies—PLDT and Globe—thus control 98 per cent of all subscribers. The dominance of GSM is almost





**Figure 2.5: Mobile mania**

Fixed and mobile telephone subscribers per 100 inhabitants, Philippines and mobile telephone subscribers per 100 inhabitants, Philippines compared to South East Asia



Source: ITU.

complete. From less than five per cent of subscribers in 1994, some 92 per cent of subscribers were connected to GSM networks in June 2001.

The Filipino market is also one of the fastest expanding in the world. Mobile growth in 2000, 127 per cent, was the second highest in the country's history after the peak of 1995, and the signs are that 2001 will be almost as good a year. Mobile is increasingly becoming a way of life in the country and, since early 2000, the predominant method of telephone communications. The Philippines became the 13th country in the world where mobiles passed fixed. From some 100'000 subscribers in 1993, the Philippine mobile market has emerged as the largest in South East Asia with 8.6 million subscribers in June 2001. Unlike fixed telephone lines where the Philippines is still playing catch-up, the nation's mobile density is way above the South East Asia average (see Figure 2.5).

What has driven this rapid mobile growth?

- One reason is the large number of full service operators. The decision to allow five mobile operators from the mid-1990s made the Philippines one of the most competitive markets in the

region. The fact that most of the operators also had international licenses made it easier to keep mobile tariffs down. The Philippines has among the lowest tariffs in the region.

- A second factor was huge pent-up demand. Though cellular (and international) operators had obligations to install several million fixed lines, there appears to have been a mismatch between supply and demand. Fixed lines were installed in places where people did not need them or for prices that they could not afford. Mobile went where the demand was and thus substituted for fixed lines. Mobile was a more attractive proposition not because it was cheaper but it was easier to acquire and prepaid meant that anybody could subscribe. At December 2000, around 80 per cent of all subscribers were prepaid.
- Finally, the craze over Short Messaging System (SMS), particularly the fact that mobile text messages are either free or cheaper than a regular mobile call, drove others to mobile. Mobile has spread like wild fire. Mobile coverage is estimated at

**Table 2.3: Plus I get free SMS!**

Comparison between fixed and mobile monthly charges, Pesos/United States Dollar

	<b>PLDT fixed (Manila)</b>	<b>Globe Mobile (Personal)</b>
Installation fee	531.55/10.5	0
Monthly fee	609.30/12.06	799/15.51
Free minutes	Unlimited	110/2.14
Free SMS	0	600

Note: Fixed tariffs are for December 2000. Mobile tariffs are for December 2001.  
Source: ITU, adapted from PTOs.

70 per cent of the population. Arguably, more Filipinos are within range of a mobile signal than a fixed telephone line.

As a result, the Filipino market is one of the most dynamic and closely observed mobile markets in the world. It leads the world in per capita SMS use (see Box 3.2) and for a developing country, is quite advanced in other mobile data applications, such as those using the SIM Toolkit. Although SMS continues to drive mobile

Internet, operators have launched 2.5 generation applications as a precursor to future third generation (3G) networks.

Smart launched Wireless Application Protocol (WAP) service in June 2000 and in November 2000 it launched a WAP portal called Zed in partnership with Sonera, Finland's leading mobile operator. The portal can also be accessed via SMS text messages.

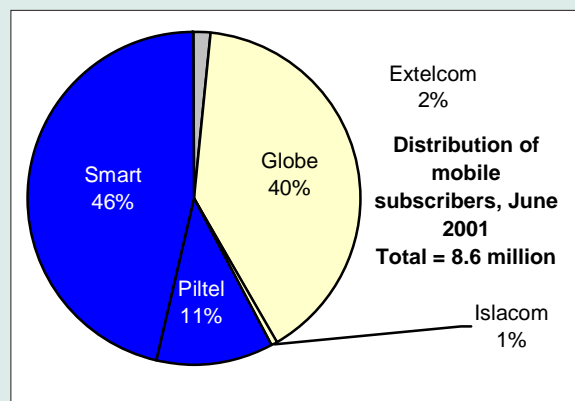
Smart launched GPRS in March 2001. One innovation is 'Smart Money', which allows users to

download cash to their SIM cards. Smart Money won the 2001 GSM Association Most Innovative Service award.<sup>6</sup> Globe introduced WAP in 1999 and GPRS in the second quarter of 2001. There are problems with these services that operators around the world also face. One is the shortage and high cost of WAP and GPRS enabled phones. Another problem has been slow speed and lack of compelling content. Despite these limitations, it is estimated that there were around 60'000 WAP phones and

**Table 2.4: Philippine mobile market**

Mobile operators and subscribers, June 2001

<b>Operator</b>	<b>System</b>	<b>Launch</b>	<b>Subscribers June 2001</b>
Extelcom	AMPS	May 1989	141'725*
Globe	GSM	September 1994	3'440'660
Islacom	GSM	June 1994	51'970
Pitlcel	AMPS CDMA	March 1991 March 1998	204'066 784'672**
Smart	ETACS GSM	April 1999	392'299 3'590'087



Note: \* December 2000. \*\* Including GSM subscribers served by using Smart's network.  
Source: ITU adapted from PTOs.

some 10'000 GPRS phones by mid-year 2001. No policy on the licensing of 3G mobile has yet been announced.

### 2.1.7 Interconnection

One obstacle to the smooth operation of the Philippine telecommunication market has been interconnection. Although operators are obligated to interconnect their telecommunication networks under the Public Telecommunication Act, the process has been slow. The NTC is supposed to establish interconnection rates if operators cannot agree amongst themselves. One irony is that even though cross-subsidies are legal, and actually encouraged in the Philippines in order to keep local service affordable, many local exchange operators claim they pay out more in interconnection fees than they receive. The situation has been aggravated by the fact that there are generally no local telephone usage charges (local calls are covered by the flat rate monthly subscription) but nevertheless local exchange carriers have to pay interconnection charges to mobile operators.

Interconnection either takes the form of revenue sharing agreements or per

minute payments amongst the operators that process the telephone call. One major problem has been that, due to the growth of mobile telecommunications, most local fixed line operators are finding that they are paying an increasing amount to mobile operators, thus reducing the amount that was supposed to be used for maintaining lower local fixed tariffs.

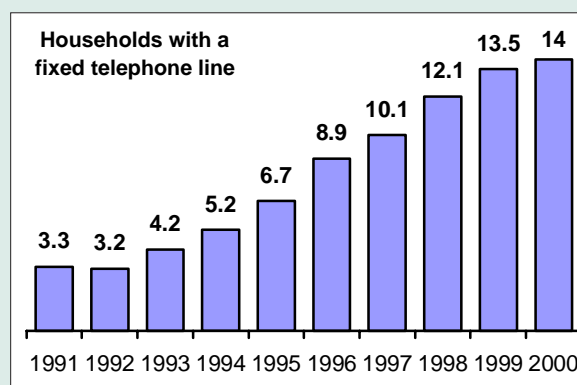
### 2.1.8 Universal Access

The Philippines has had success over the last decade in improving access to basic telecommunication services. One measure of *Universal Service* is the number of households with a telephone. The nation has seen a steady rise in the number of homes with a fixed telephone line over the last decade, from 3.3 per cent in 1991 to 14 per cent at the end of 2000.<sup>7</sup> If mobile telephone ownership were included, the figure would undoubtedly be higher but this information is unfortunately not collected.

Nonetheless, it is clear that a majority of Filipino homes still do not have a telephone, either because they cannot afford one or because the infrastructure is not available.<sup>8</sup> Thus,

**Table 2.5: Universal Access and Universal Service**

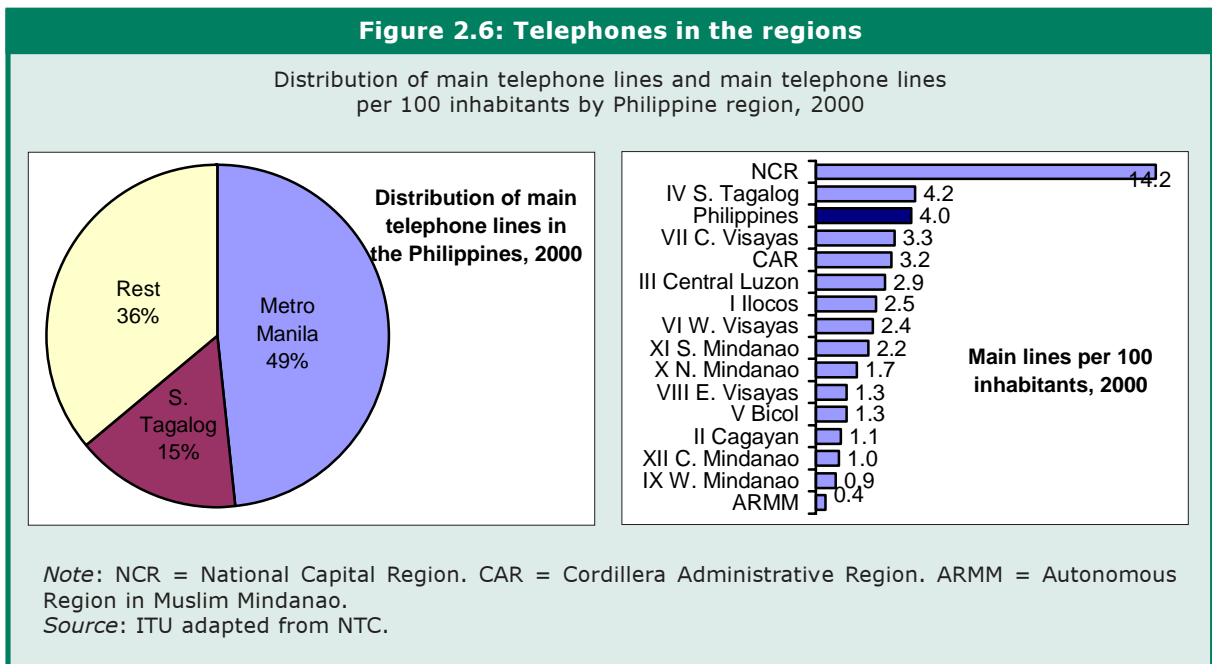
Administrative Unit	Number	Number with telephone service
Province	78	?
City	84	869 (54%) 1/
Municipality	1'526	
Barangay	41'940	9'940 (24%) 2/



*Note:* 1/ Data comes from NTC, which does not distinguish between city and municipality. Data refer to 1999. Note that in its *2000 Annual Report Form 20-F*, PLDT reports that its network is linked to calling points in 1'134 municipalities in the country, which would raise the per cent with telephone service to 74 per cent. 2/ Data for number of Barangays with telephone service is from PLDT's *2001-02 Metro Manila Telephone Directory*.

Data for households with a fixed telephone line is derived from the number of residential telephone lines divided by the number of households.

*Source:* ITU adapted from NTC, NSO and PLDT.



a more realistic goal is *Universal Access*, that is reasonable access to a telephone. This could either be through a neighbour, from a work telephone or from a public payphone. This might be measured in a survey that asked households how far (either by time or distance) they are from a telephone. This kind of data is lacking. Instead, most Philippine government measurements of telephone access are based on the traditional *teledensity* indicator—that is the number of fixed telephone lines in service divided by the population. The government often uses capacity (i.e., the number of lines installed), rather than lines in service, to calculate teledensity. This presents a distorted and not globally comparable figure.

Data for main lines in service show wide variations within the country. Almost half of all fixed telephone lines in service are in the National Capital Region (around Manila) even though it only accounts for 14 per cent of the nation’s population. The number of fixed telephone lines in service per 100 inhabitants varies from 14.2 in the capital region to less than one in three regions. All but two regions are below the national average of four fixed telephone lines in service per 100 inhabitants.

Another measure of access to telephone service is the number of payphones. This has risen steadily from 4’809 in 1991 to 14’959 in 2000. Another indicator would to be measure the number of localities with telephone service. This gauges the level of telephone availability in the various administrative units in the Philippines (i.e., province, city, municipality, and barangay). The Municipal Telephone Act of 2000 aimed to have publicly provided and subsequently privatized, telephones installed in each city and municipality. By 1999, one year before the Act lapsed, 46 per cent of the original target of 1’609 cities and municipalities were still without a telephone.

Other government policies for promoting telephone access included EO 109 that mandated mobile cellular and international telephone service providers to also install fixed telephone lines. At least ten per cent of the lines were to be installed in rural areas. The government has explicitly encouraged cross-subsidies in pricing in an attempt to keep local tariffs affordable. Local service prices in rural areas and provincial regions are also cheaper than in the National Capital Area. However since most operators do not charge for local calls, the

### Box 2.2: Universal availability for US\$ 24 million

One potential solution for universal telephone access is satellite technology. One interesting technology is the regional Global Mobile Personal Communications Satellite Systems (GMPCS). These have rather more modest costs and objectives than the global GMPCS operators, like Iridium, Global Star or ICO, which have struggled to come up with viable business plans. But they still offer services that can be accessed by small handsets and do not require large investment in the ground segment (e.g., earth station or large satellite antenna). Asia Cellular Satellite (ACeS), a consortium of PLDT, Lockheed Martin (USA), Nusantara (Indonesia) and Jasmine (Thailand), launched a regional GMPCS satellite in February 2000 that has a footprint over all of East Asia. Smart plans to establish some 1'500 public telephone offices in remote areas around the Philippines using the ACeS system.<sup>11</sup>

One lesson learned from earlier GMPCS systems that were not successful was that pricing has to be competitive with mobile cellular systems. Calling charges for the ACeS system in the Philippines are reasonable at US\$ 0.26 per minute for domestic calls and US\$ 0.35 per minute for international. These rates are competitive with other offerings. The downside is that incoming calls are charged at US\$ 0.26 per minute. A handset and SIM card cost US\$ 691 and US\$ 43 respectively. The Philippines could thus extend telephone service in the 32'000 or so barangays without telephone service for around US\$ 23.5 million. This represents a modest investment; more or less equivalent to PLDT's profits in the first half of 2001.

monthly service charge is higher, raising the cost of telephone service. Line installation charges also tend to be relatively expensive and, unlike monthly subscription charges, are the same throughout the country. For example, PLDT charges 1'999 pesos (US\$ 38.82) (reduced from 3'377 pesos (US\$ 65.57) in November 2000) regardless of whether the subscriber is in Manila or Mindanao. Despite this reduction, over half of Filipino homes cannot afford fixed line telephone service.<sup>9</sup> Fixed operators are taking a lesson from mobile and introducing prepaid service. PLDT's Teletipid fixed line prepaid service had chalked up over 100'000 subscribers by September 2001, one year after launching.

Future government plans call for raising installed capacity density to 12.73 in 2004 (from 9.05 in 2000).<sup>10</sup> This target is not likely to add to any measurable increase in telephone access unless prices are lowered, as the telephone lines will remain unsubscribed. More likely, it will add to the already high level of excess capacity. Plans also call for extending telephone service to 71.6 per cent of barangays (from 24 per cent in 2000). The impact of mobile on enhancing access to telephone service is also significant. Though official figures are not available, it is estimated that over 70 per cent of the Filipino population is covered by

a mobile signal. The government has set a target of 100 per cent coverage of provincial capitals and cities by 2004. This target is probably already close to being met if not already accomplished. It might have been more relevant to pursue a goal of 95 per cent of the population covered by a terrestrial mobile cellular signal. Furthermore, this important indicator should be tracked and monitored on a regular basis.

The entire archipelago is already covered by a telephone signal if one factors in satellite systems. This coverage could be leveraged to provide a higher level of telephone access (see Box 2.2).

### 2.2 Mass Media

The Philippines has a vibrant media sector. Ownership is predominately private and press freedom is guaranteed under the constitution. The end of the Marcos regime represented a turning point for the industry. Several leading newspapers and broadcast stations had been shut down during the imposition of martial law. They reopened later, to be joined by newcomers attracted by the liberal press environment. One major problem in analysing the mass media sector is the lack of reliable information. There is a shortage of timely official statistics and other

sources vary widely (see Table 2.6).

**2.2.1 Printed press**

There are over thirty daily newspapers, most published in Manila. Many are in the English language. International dailies and foreign magazines are widely available. Most of the leading newspapers have web sites (see Box 2.3).

There is considerable variation in the data regarding just how many Filipinos actually read newspapers. A 1994 survey by the NSO found that 30 per cent of the population over ten were exposed to newspapers. The latest available data from UNESCO for 1996 put the number of daily newspapers at 47 and circulation at 5.7 million copies or 8.2 per 100 inhabitants.<sup>12</sup> Another estimate, based on sales figures, market share and pass-on copies of the country's largest newspaper, suggest that circulation of all newspapers in 2000 was around two million copies per day. This amounts to an adult newspaper

penetration of 4.2 per cent or 2.7 for the country as a whole.

**2.2.2 Broadcasting**

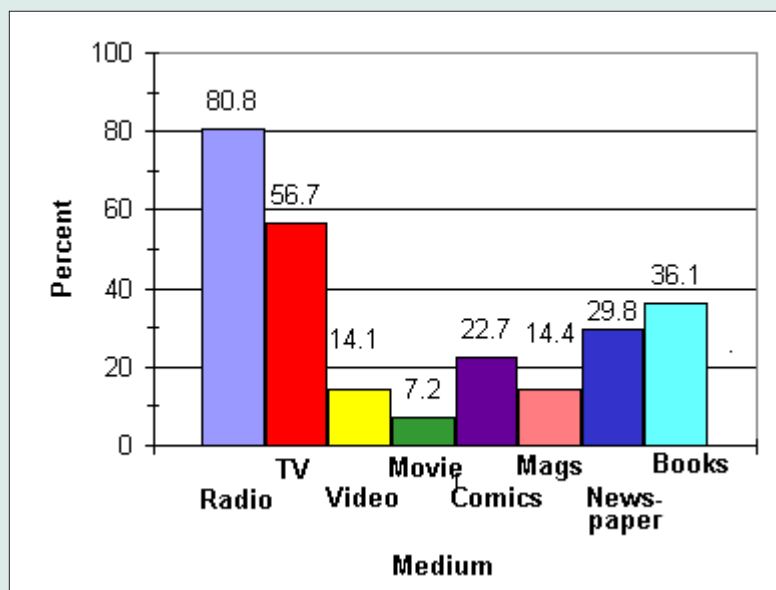
The first radio stations were set up in the 1920s and the first commercial stations started broadcasting in 1930. The first television broadcast was in October 1953.

Radio is the most popular medium in the country with some 81 per cent of those over ten listening in 1994.<sup>13</sup> AM stations broadcast mainly in Filipino whereas FM is mainly in English. The NSO put the number of households with a radio receiver at 81 per cent in 1994.

There are six free-to-air nationwide television networks. *ABS-CBN Broadcasting Corporation* (ABS-CBN, <[www.abs-cbn.com](http://www.abs-cbn.com)>) broadcasts on Channel 2 and claims to be the most popular television station in the nation with an average audience share of 45 per cent.<sup>14</sup> *People's Television Network* <[www.nbn.ph](http://www.nbn.ph)>, the only

**Figure 2.7: Mass Media**

Exposure to Forms of Mass Media, 1994, among citizens older than 10



Source: NSO.

government-owned station, broadcasts on Channel 4. *Associated Broadcasting Corporation* (ABC, <[www.abc5tv.com](http://www.abc5tv.com)>) broadcasts on Channel 5. *GMA* <[www.igma.tv](http://www.igma.tv)> claims to be the nation's most awarded television network and the second most watched; it broadcasts on Channel 7. *Radio Philippines Network* (RPN, <[www.rpn9.com](http://www.rpn9.com)>) broadcasts on Channel 9. *IBC* <[www.abc.com.ph](http://www.abc.com.ph)> broadcasts on Channel 13. There are an estimated eight million TV homes in the country or a little over half of all households.<sup>15</sup>

Cable television began in the Philippines in 1969.<sup>16</sup> It was monopolized when a nationwide

franchise was awarded to one company in 1977. Ten years later the industry was liberalized. According to the NTC, there were 1'162 licensed cable television companies at the end of 2000. However perhaps less than half are actually in operation and three major ones dominate: Sky, Home and Sun. It is estimated that they account for more than half of the some 1.3 million estimated cable TV subscribers in the country.

Satellite TV is available through the use of large antennas (SMATV). A few companies are trying to launch Direct-To-Home (DTH) satellite service, but face tough competition from the large number of cable TV subscribers.

### Box 2.3: The Portal Wars

Filipino newspapers face a tough competitor in the Internet. The country's large number of English speakers is comfortable surfing to US sites for news and information. According to one estimate, some 90 per cent of Filipino Internet traffic is destined to the US. Global portals are moving in the reverse direction, setting up Filipino-oriented sites. *Yahoo* has a specialized Philippines page <[asia.fullcoverage.yahoo.com/fc/Asia/Philippines/](http://asia.fullcoverage.yahoo.com/fc/Asia/Philippines/)> while *Lycos* has established a Filipino site <[ph.lycosasia.com](http://ph.lycosasia.com)>. Local newspapers also have to contend with new Filipino sites such as *Global Pinoy* <[www.globalpinoy.com](http://www.globalpinoy.com)> that do not have ties to the traditional media. *Yehey!*, set up by five college students in 1997, claims to be the Philippines top search engine providing links to some 16'000 Filipino-related web sites. *Yehey!*, which also provides news, weather and other information, has six million page views a month.

The papers are fighting back. The *Manila Times*, once the largest English newspaper in East Asia, was one of the country's first newspapers to go

online in September 1995. Since then, all the leading newspapers have followed. *INQ7* merges the country's leading newspaper, the *Philippines Daily Inquirer* (PDI) and its second most popular television station, *GMA*, into an integrated portal. Since most Filipinos within the country do not have fast Internet access, *INQ7* optimises speed so that pages can be downloaded quickly. It also offers regular updates to attract people to the site. *INQ7* claims to be one of the most visited news sites in the world. PDI states that there were 800'000 daily hits to its web site during the height of the Estrada controversy.

Not to be outdone, broadcasters have also jumped into the foray. All the leading television networks have web sites. *ABS-CBN* has three, one for its television station, another for news reports and a third is community oriented *Pinoycentral*. *ABS-CBN* was the first to provide live video streaming. It claims that its three sites, which swept the Philippine Web Awards, garnished some 87 million page views in the year 2000.

**Table 2.6: Mass media contradictions**

Indicator	Value	Source
Number of daily newspapers	47	UNESCO 1996.
Exposure to newspaper per 100 inhabitants	29.8	NSO 1994. Age 10+
Newspaper circulation per 100 inhabitants	8.2	UNESCO 1996.
Newspaper circulation per 100 inhabitants	2.7	ITU estimate 2000.
Number of households with a radio -- % of households with a radio	10'325'000 81.2%	NSO 1994.
Number of households with a television -- % of households with a television	5'712'000 44.9%	NSO 1994.
Number of households with a television Number of households with cable TV	7'000'000 350'000	Sun Cable 2001.
Number of households with cable TV	800'000	Sky Cable 2000.
Number of households with a television -- % of households with a television	8'000'000 52.4%	ITU estimate 2000.
Number of households with a television -- % of households with a television	12'000'000 79%	ABS-CBN 2000.
Number of households with a television– Metro Manila -- % of households with a television Number of households with cable TV -- % of households with cable TV	2'146'000 93% 727'000 34%	ACNielsen 1999— Metro Manila.

Source: ITU adapted from sources shown.



- <sup>3</sup> Laws and regulations applicable to the telecommunication sector are posted on the NTC web site at [www.ntc.gov.ph/laws/laws.html](http://www.ntc.gov.ph/laws/laws.html).
- <sup>4</sup> Michael Minges. "Philippine telecommunications in an ASEAN context." Presented at Philippines Telecommunications '94. November 1994. Manila.
- <sup>5</sup> The distribution of the Philippines international telephone traffic closely parallels the location of Filipino Overseas Workers. For a breakdown of Philippine international telephone traffic see PLDT. *Annual Report of Form 20-F 2000*.
- <sup>6</sup> GSM Association. "Winners of the 2001 GSM Association Awards acclaimed." *Press Release*. 21 February 2001. [http://www.gsmworld.com/news/press\\_2001/press\\_releases\\_5.html](http://www.gsmworld.com/news/press_2001/press_releases_5.html).
- <sup>7</sup> This figure is derived from the number of residential telephone lines divided by the number of households.
- <sup>8</sup> Infrastructure would also include electricity. One quarter of Filipino homes did not have electricity in 1999 and some 10'000 barangays lacked electricity. Medium Term Philippine Development Plan. 1999-2004.
- <sup>9</sup> It is reported that 63 per cent of families in the Philippines cannot afford basic telephone service. See "PLDT launches Phonetastic Festival to offer affordable phone service." *Press Release*. 9 November 2001. [www.pldt.com.ph/articles/11-09-2001.html](http://www.pldt.com.ph/articles/11-09-2001.html).
- <sup>10</sup> NEDA. Medium-Term Philippine Development Plan, 1999-2004.
- <sup>11</sup> "SMART inaugurates satellite capable Public Calling Office." *Press Release*. 15 January 2001. [www.smart.com.ph/News/news\\_corp.asp?Id=130](http://www.smart.com.ph/News/news_corp.asp?Id=130).
- <sup>12</sup> UNESCO. "Daily and non-daily newspapers: number and circulation." [http://www.uis.unesco.org/statsen/statistics/yearbook/tables%5CCultAndCom%5CTable\\_IV\\_8\\_Asia.html](http://www.uis.unesco.org/statsen/statistics/yearbook/tables%5CCultAndCom%5CTable_IV_8_Asia.html).
- <sup>13</sup> NSO. "Exposure of Population to Mass Media." <http://www.census.gov.ph/data/sectordata/fl94-expmmedia.html>.
- <sup>14</sup> "ABS-CBN registers 4% EBITDA growth as Net Income declines 19% as of September 2001." *Press Release*. 12 November 2001. <http://www.abs-cbn.com/ir/disclosure1112.shtml>.
- <sup>15</sup> This figure is derived from a 1994 NSO survey, the latest official figures available. The result appears low especially when compared with neighbouring countries. An AC Nielsen study estimates that four out of every five Filipino homes has a television.
- <sup>16</sup> For a brief timeline of the Filipino cable industry see the Philippine Cable Television Association web site at <http://www.pcta.org.ph/aboutus.html>.

### 3. Internet in the Philippines

#### 3.1 History

Although some companies established their own private connections to the Internet in the early 1990s, it was not until 1994 that the Philippines obtained its first permanent public connection. The Philippine Network Foundation (PHNET) achieved the nation's first public permanent connection to the Internet, via a 64 kbit/s link to Sprint in the United States on 29 March 1994.<sup>17</sup> PHNET, a consortium of private and government institutions, managed what was then the country's only public gateway to the Internet. These institutions included government agencies, especially those affiliated with the Department of Science and Technology, universities, and some commercial companies. The first commercial Internet Service Provider (ISP), Mosaic Communications (MosCom), launched service in August 1994.

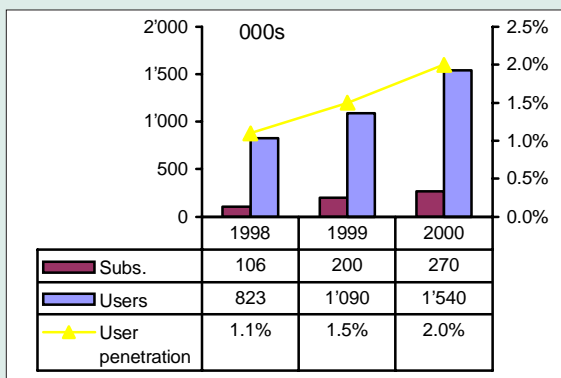
#### 3.2 Market

There is no official figure for the number of ISPs operating today. The

National Telecommunication Commission (NTC) has registered over 150 Value-Added Service (VAS) providers. However not all are ISPs nor are they all in operation. There are also ISPs that have not registered with the NTC. Counts of ISPs with AS numbers or members of the Philippine Internet Service Organization (PISO) both come to 48.<sup>18</sup> Thus, it seems safe to say there were less than 50 active ISPs in the Philippines at October 2001.

The structure of the Internet market in the Philippines is hierarchical. This is because VAS providers must lease their transmission infrastructure from licensed telecommunication operators. For example, at the end of 1999, only 13 out of 199 VAS had their own networks. At the top of the pyramid are the public telecommunication operators with international Internet bandwidth. Some of these have their own Internet subsidiaries. Almost all international telecom operators lease international Internet bandwidth to downstream ISPs. The larger ISPs in turn resell connectivity to smaller ISPs in the provinces.

**Figure 3.1: Internet subscribers and estimated users in the Philippines**



Source: ITU estimates.

Reliable figures on the number of Internet subscribers in the country do not exist. Although the NTC solicits this information on a quarterly basis, not all ISPs furnish the information. In any case, the information is neither compiled nor published. In addition, some ISPs use different methodologies for reporting subscribers (e.g., estimated number of users rather than subscribers).

The growth of the pre-paid Internet market also poses a statistical problem since there are different ways to account for this. The ITU estimates that there were around 270'000 dial-up subscribers at the beginning of the year 2001. It is estimated that the top four ISPs account for around half the market. According to a government report, there were some 1.5 million users at the end of 2000 for a penetration of around two per cent of the population.<sup>19</sup>

#### 3.3 Interconnection

There is no legal requirement for ISPs to interconnect with each other. Some ISPs have private peering arrangements with each other. ISPs using the same international gateway operator would be interconnected by default. Of the eleven international gateway telecommunication operators, six provide international Internet bandwidth (Bayantel, Digitel, Globe, Eastern, Philcomsat and PLDT).

ISPs can connect to three exchanges for swapping their national Internet traffic:

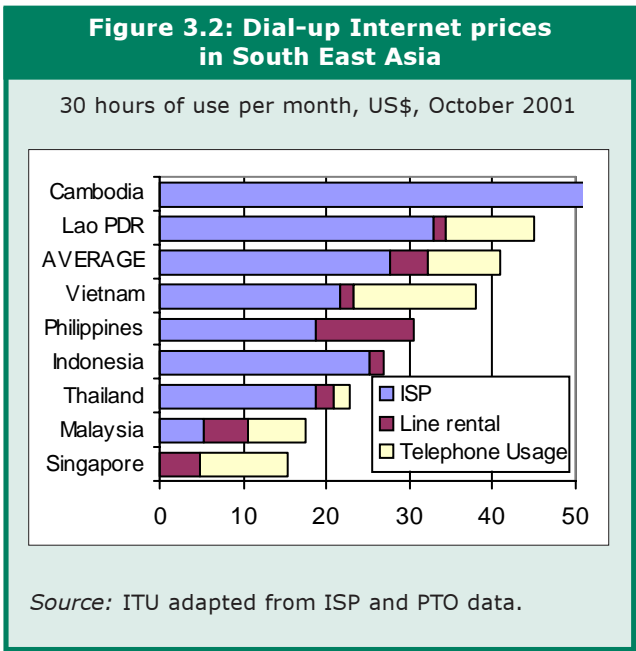
- Philippines Internet Exchange (PHIX) <[www.phix.net.ph](http://www.phix.net.ph)> operated by PLDT. PHIX was the first Internet exchange in the country and launched in January 1997. Eight ISPs exchange their traffic, including Infocomm, PLDT's ISP subsidiary. Other ISPs using PHIX are Evoserve, Iphil, MosCom, Pacific Internet, Tridel, Virtual Link and WorldTel.
- Common Routing Exchange (CORE) <[www.ph.net/CORE.html](http://www.ph.net/CORE.html)> managed by the Philippine Network Foundation (PHNET). This exchange is free and open to all registered ISPs but they must have their own international connectivity and supply their own 128 kbit/s link to the exchange.
- Manila Internet Exchange (MIX, <[www.etpi.com/manilaix.htm](http://www.etpi.com/manilaix.htm)>) operated by Eastern Telecoms (ETPI). MIX has 13 ISPs: Bitstop,

Destiny, Digitel, Edsamil, ETPI, Evoserve, Interdotnet, Meridian, MosCom, Pacific Internet, Philweb, Sky Internet and Tridel. The CORE exchange also interconnects with MIX.

It is estimated that around 90 per cent of Philippine Internet traffic is destined abroad, primarily to the United States. Nonetheless there is a growing amount of domestic traffic. Since there is no single Internet exchange to which all ISPs are connected, there are situations where national Internet traffic will be transited abroad to return to the Philippines, adding to international Internet connectivity costs. Thus far, there has been no neutral party interested in promoting a neutral Internet exchange to which all ISPs could connect. Except for CORE, a different telecom operator operates each exchange and they have not cooperated. Although CORE advertises itself as a neutral exchange, it is perceived as being controlled by Bayantel. PLDT has a plan to interconnect all of the Internet exchanges.

ISPs cannot provide their own national or international infrastructure unless they also have a telecommunication franchise license. There is no national Internet backbone so this means that some ISPs have strung together a national network by leasing lines from different telecommunication providers. In an attempt to facilitate the provision of international connectivity, PLDT has launched its I-GATE service for ISPs. Instead of having to procure international bandwidth through multiple domestic and foreign suppliers, I-GATE is a one-stop service that provides a direct connection to the Internet backbone. It is powered by a 155 Mbit/s (December 2001) submarine fibre optic connection to the US.

The Philippines archipelago is well situated in terms of being able to take advantage of undersea fibre optic routes. As a result most international Internet connectivity is symmetric via fibre optic cable. Most connections are to the United States, the destination



telephone ownership, and reduces the size of the dial-up market. So while the Philippines has comparatively low ISP charges, the overall cost of Internet access is relatively high when factoring in the telephone subscription charge.

Pre-paid cards have been growing in popularity, for fixed as well as for mobile networks. One reason is that a pre-paid user does not necessarily have to have a telephone line or PC since the card can be used at Internet cafés.

of the majority of traffic. There are a few connections to other Asian economies primarily Japan, Hong Kong SAR and Singapore. Although ISPs have to go through telecom operators for outgoing international connectivity they can negotiate their own incoming satellite connectivity. As with the number of subscribers and users, there is a lack of clarity regarding international Internet bandwidth in the country. The top four ISPs reported 237 Mbit/s of international incoming connectivity and 154 Mbit/s of outgoing in October 2001.

### 3.4 Pricing

The Philippines is the only country in South East Asia where local telephone calls are free.<sup>20</sup> Thus, dial-up Internet subscribers only pay the ISP charge. ISPs generally provide various packages based on the number of hours. None yet offers an unlimited plan, possibly because when combined with the lack of local call charges, users could stay connected indefinitely. Efforts to adopt local call charging as part of a tariff rebalancing exercise have met with stiff resistance and it is unlikely it will be implemented.<sup>21</sup> The downside is that the Philippines has the highest monthly telephone subscription charges in the region, which raises the price of

### 3.5 Broadband

High-speed Internet access, via cable modem, ADSL (Asymmetric Digital Subscriber Line), and fixed wireless broadband systems, is available in the Philippines. There are up to ten operators currently in the market, but none has more than around 3'000 subscribers. Perhaps because of the confusing array of choices, the market has been slow to take off and no one is making money from broadband access in the Philippines at present:

- Several telecom operators have launched ADSL. PLDT introduced ADSL in November 2000. It claimed around 3'000 subscribers in September 2001. However, the basic service offered for residential users provides only a guaranteed 64 kbit/s burstable to 128 kbit/s. By most definitions, this would not constitute a broadband connection but in the Philippines, where Internet dial-up speeds are generally slow and unreliable, it is possible to market the service as "broadband". PLDT's prices are around US\$ 50 per month for residential subscribers and US\$ 200 for business users.

It is not clear why business users should pay so much more for the same service, but PLDT obviously has no interest in cannibalising their existing leased line and ISDN services.

- Internet access via cable modem was launched in 1999. Industry estimates of the number of cable television subscribers is over one million, so it would seem that cable modem access has potential. However many subscribers are connected to antiquated networks that would need to be upgraded for cable modem access to be feasible. One of the leading cable modem providers, Sky Internet, was unable to bill its customers for several months following its launch due to the antiquity of its system. One incentive would be to allow cable providers to also offer telephony over their cable networks but so far this is prohibited.

Several companies have launched or are planning to launch fixed wireless broadband access. These use various systems including such as MMDS (Microwave Multipoint Distribution System) and LMDS (Local (or Low-power) Multi-point Distribution System). Suppliers include, Broadband Philippines (BP)

<[www.broadbandphilippines.com](http://www.broadbandphilippines.com)>, which uses spectrum in the 29-31 GHz range to provide LMDS service. It was awarded the spectrum in 1998 and has been offering service since October 1999. BP's main service offering is 128 kbit/s burstable to 512 kbit/s, though some clients, like Thomson Financial or IDS Finance, have much higher capacity. Multimedia Technology Inc owns BP and its investors include the US company, Callahan Associates, and the Soros Foundation. The limitation on foreign ownership has acted as a brake on expansion. BP's strategy has been mainly to serve clients in Multi-tenanted units (MTUs) in the main business districts, like Makati in Manila. As of October 2001, it had around 300 customers in 80-100 such MTUs.

Broadband Internet access faces a number of barriers. First, the service is relatively expensive, at least for business ADSL access. One reason is that telecom operators are reluctant to price ADSL below their leased line and ISDN services for which they already have many customers. ADSL for the most part seems to be targeted at business users. There is also no regulatory requirement for fixed line operators to unbundle their local loop lines to allow other operators or ISPs to provide ADSL service. Second, the availability of flat rate telephone tariffs

**Table 3.1: Broadband pricing**

Cable modem and ADSL subscription rates, December 2001

	<b>Home Cable Regular Package</b>	<b>GlobeNet DSL Basic</b>
Monthly Service Fee	1'650 pesos (US\$ 32)	US\$ 665
Modem Rental	330 pesos/mo. (US\$ 6.40)	
Installation Fee	1'650 pesos (US\$ 32)	US\$ 500

*Note:* Subscribers to the Home Cable package must subscribe for one year. No mention is made of speed. GlobeNet's DSL Basic is priced in US\$. Speed is 512 kbps both ways.  
*Source:* ITU adapted from operators.

means that no extra usage charges are incurred for dial-up access, mitigating the cost saving of migrating to broadband. Third, availability is essentially limited to Metro Manila.

It is estimated that there were some 10'000 broadband subscribers by October 2001, a figure projected to grow to 88'000 by 2005.<sup>22</sup>

### 3.6 Rules & regulations

#### 3.6.1 The Value-Added World

Internet access provision is considered a value-added service in the Philippines and regulated under Republic Act No. 7925.<sup>23</sup> ISPs need only register with the NTC to provide service. The registration is valid for a period of five years. There is a one time processing fee of 100 pesos (US\$ 2) and an annual fee of 6'000 pesos (US\$ 120) per year. The latter amount is payable at the time of registration for the full five years (i.e., 30'000 pesos (US\$ 600)). This also means that there is no incentive to follow-up whether a VAS actually starts up its business. There is no limit on the number of registrations. At the end of 2000, there were 156 Value-Added Service (VAS) registrations. Note that a VAS registration could be for any service and not necessarily Internet access. Also, as mentioned, even though a company has obtained a VAS registration, it does not mean that it is necessarily in operation.

A value-added service is one that is provided over existing telecommunications infrastructure. That definition is strictly applied so that technically, ISPs are not allowed to supply their own infrastructure but must lease it from a franchised telecommunication provider. In order to provide their own infrastructure, ISPs would have to obtain a franchise (officially known as "A Franchise to Construct, Install, Establish, Operate and Maintain Telecommunications Systems throughout the Philippines"). The franchise has a term of 25 years. Note that franchised telecommunication entities can provide value-added services subject to:

"a) prior approval of the Commission is secured to ensure that such VAS offerings are not cross-subsidized from the proceeds of their utility operations;

b) other providers of VAS are not discriminated against in rates nor denied equitable access to their facilities; and

c) separate books of accounts are maintained for the VAS"

The Philippine Constitution prohibits telecommunications entities, including ISPs, from having more than 40 per cent of their share capital owned by persons who are not citizens of the Philippines and from appointing any executive managing officer that is not a citizen of the Philippines.

#### 3.6.2 Content

There is no Internet content control in the Philippines. An Internet content provider can establish a web site without any formal application. Nonetheless content is a concern, particularly pornography. The Catholic Church operates an ISP service that blocks out access to pornographic sites (see Box 3.1). Some ISPs provide 'family' type subscriptions that also provide firewalls to pornographic sites.

#### 3.6.3 .PH

The Advanced Science and Technology Institute <[dns.gov.ph](http://dns.gov.ph)> of the Department of Science and Technology is responsible for the .GOV.PH domain. The Philippine Network Foundation (PHNET) <[dns.ph.net](http://dns.ph.net)> manages the .EDU.PH domain. Only academic institutions operating in the Philippines can register under the EDU.PH domain and must be recognized by the Department of Education or the Council of Higher Education. Fees are US\$ 35/year or 1715 pesos/year. Registration must be for a period of two years. dotPH <[www.domreg.org.ph](http://www.domreg.org.ph)> manages all other domain names. Second level domain names are not required. The cost is US\$ 70 for two years.

#### 3.6.4 VoIP

Voice over Internet Protocol (VoIP) is illegal except by licensed telecommunication operators. The argument is that VoIP is a voice service for which a license is required. This applies to telephone-to-telephone and PC-to-telephone VoIP but not PC-to-PC Internet calls. There is no separate category of license of VoIP. At this time, none of the major telecom carriers were offering a discounted VoIP service. However, it is likely that VoIP traffic is widespread, particularly in Cebu, which has a thriving cybercafé culture. One reason to believe that VoIP traffic is high is the fact that calls to the United States, the main source of VoIP traffic, are no cheaper than to other international destinations.

#### 3.6.5 Quality of Service

Complaints about Internet quality of service are widespread. This includes slow speed and inability to dial-in. Another growing problem is the release of prepaid cards that offer poor quality service, or in some cases, no service at all, if the supplier of the cards takes the money and then disappears. Although the NTC collects some quality of service information submitted in quarterly reports by VAS, this information is not published. Nor has the NTC thus far investigated allegations of poor service quality.

#### 3.7 Universal access

Just like the economic divide in the Philippines, there is also a digital one. According to one survey, over half the country's Internet users are in Manila

even though the capital only accounts for 13 per cent of the population.<sup>24</sup> Another report estimates that there are 20 million potential Internet users in the country but less than two million were actually using it. Despite these gaps, there are few practical measures to remedy it. Though programmes called for telecom operators to install four million telephone lines, or for so many municipalities to be provided with telephone service, there are still many parts of the country without a basic telephone service upon which to pin Internet access.

The number of PCs is also low. It is estimated that some 2.7 per cent of households have a PC.<sup>25</sup> Thus for the majority, access via public locations is the only immediate short-term option. Most surveys agree that outside Manila, the predominant form of access is via public locations such as schools or Internet cafés.

Private and voluntary efforts are helping to enhance public access. There are between 1'500 - 5'000 Internet cafés around the nation. Cyberworld, a chain of branded Internet cafés that launched in 2000, had twelve outlets in April 2001 and plans to create thousands more.<sup>26</sup> The Catholic Church has emerged as a leading ISP and is planning to connect all churches and parochial schools (see Box 3.1), though the lack of profitability of its services may slowdown its expansion plans.

One idea being contemplated by the NTC is a proposal to allow ISPs a license for procuring their own infrastructure in exchange for providing service in remote areas.



### Box 3.1: E-vangelism

With a population that is over four-fifths Catholic, the Church is a large and powerful organization in the Philippines. Furthermore, it has a pool of well-qualified members with compelling zeal. If these resources could be applied to ICTs, miraculous things might happen.

Indeed, the Catholic Bishops Conference of the Philippines (CBCP) <[www.cbcp.net](http://www.cbcp.net)> is aiming to become the Philippines' leading Internet Service Provider (ISP). The CBCP has a five-year project to wire each of the nation's 79 dioceses and 2'900 parochial schools in the country.<sup>27</sup> It has strung together an Internet backbone (CBCPNet) running the length of the archipelago. The CBCP is also working with private companies to set up over 1'000 Internet cafés in poor neighbourhoods.<sup>28</sup>

This so-called 'e-vangelization' not only uses ICT for development, but also as a tool to spread the

gospel. Applications are being developed to deliver marriage guidance, the catechism and even to celebrate Mass, online through video streaming. Potential services include providing Internet telephony to the nation's large overseas population so they can stay in touch with relatives back home (technically illegal at present, though if the Catholic Church supported it, the official stance may shift). Another idea is to provide e-commerce services for farmers.

Another reason for the Church's interest in the Internet is to provide pornography-free ISP access.<sup>29</sup> It has installed a firewall on its server that blocks access to pornographic sites. Violent games, however, are not filtered since they are often the most popular application at most Internet cafés. This would discourage customers and reduce the revenues needed for expansion.



**Box 3.2: Txtng Nation**

Beep. Beep. The sound of an incoming GSM mobile Short Message Service (SMS). A sound becoming as prevalent as cars honking in the Philippines. The nation is crazy about txtng, the term used to refer to SMS. In December 2000, Filipinos were sending almost 50 million SMS a day or around nine per subscriber. They are the world leader in per capita SMS usage, accounting for some ten per cent of all SMS messages sent around the world (see Box Figure 1.1, left chart). What's behind the craze?

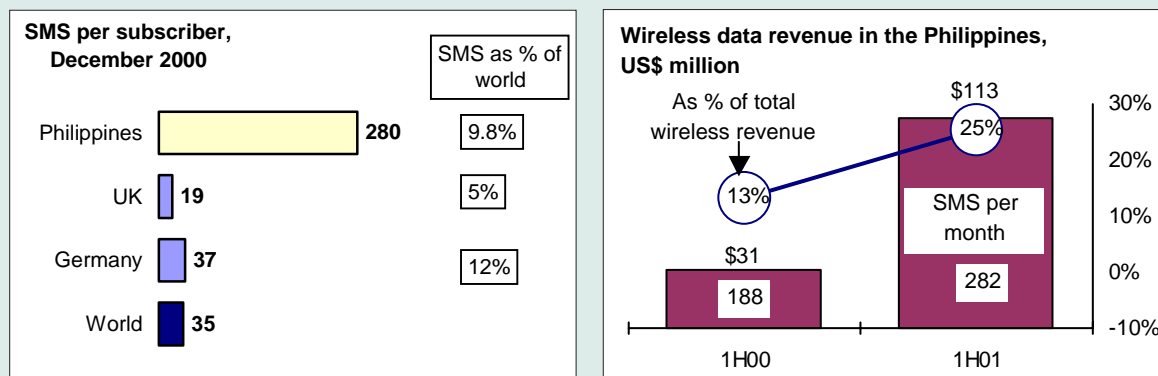
- **Mobile growth.** The Philippines had 8.5 million mobile subscribers at June 2001. Mobile passed fixed back in January 2000 and shows no sign of slowing down. Estimates of the potential subscriber base over the next few years range from 15-20 million. SMS is also a source of information for those that do not have a computer; mobile subscribers outnumber PCs in the Philippines 4:1.
- **Pricing.** An SMS is much cheaper than a phone call. SMS was initially free. Although a nominal P1 per message charge was introduced in October 1999, a number of free messages are included with both post-paid and pre-paid subscriptions. The charge was introduced to encourage 'responsible txtng' but equally for operators to cash in on the craze. Despite the free messages, SMS constitutes a growing

portion of mobile revenues. After exceeding the monthly free messages (150 for prepaid and 400 for a basic post-paid package), the cost of an SMS message is still eight times cheaper than a one minute peak period voice call. For every call made on a mobilephone, an average of ten SMS are sent. Mobilephones are no longer a device for phone calls, but a 'SMS terminal with voice capability'.<sup>30</sup>

- **Culture.** The Filipino language Tagalog uses Roman characters and can thus be used with any mobilephone. Many Filipinos also speak English and indeed a hybrid 'Taglish' has emerged for sending SMS messages. Txtng may also be supplementing the traditional Filipino love of writing. In a country in which courting was traditionally conducted via love letters, sending txtng is said to be a natural progression.

Though most SMS in the Philippines are personal messages, there are other interesting applications. Users can send a request for virtually any kind of information ranging from stock quotes and help with students' homework, to astrological predictions, or passages from the Bible. SMS is also attributed with accelerating the fall of former President Estrada by facilitating the arrangement of rallies.<sup>31</sup> Txtng has now expanded to fixed-lines so that regular telephones can send messages to mobile ones.<sup>32</sup>

**Box figure 3.2: The global SMS champ**



*Note:* The left chart shows the average number of SMS sent per subscriber in the month of December 2000. It is obtained by dividing the number of SMS messages by the number of cellular subscribers. 'SMS as % of world' is obtained by dividing the number of SMS messages (in December 2000) for the countries shown by the total number of SMS messages sent around the world (in December 2000).  
*Source:* ITU adapted from Globe Telecom, PLDT and GSM Association.

- <sup>17</sup> Miguel A. L. Paraz. "Developing a Viable Framework for Commercial Internet Operations in the Asia-Pacific Region: The Philippine Experience." [http://www.isoc.org/inet97/proceedings/E6/E6\\_1.HTM](http://www.isoc.org/inet97/proceedings/E6/E6_1.HTM).
- <sup>18</sup> AS stands for Autonomous System (AS) number used to identify an IP network. An ISP needs this number to offer services. ISPs with AS numbers were retrieved from the [www.internet.org.ph](http://www.internet.org.ph) site. Members of PISO are listed on the PISO web site at: [www.piso.org.ph](http://www.piso.org.ph). A search on AS numbers assigned to Philippine organizations by the regional organization that assigns these numbers turned up 31, which suggests that the number of ISPs is even less than expected. See Asia Pacific Network Information Centre at [www.apnic.net](http://www.apnic.net)
- <sup>19</sup> National Economic and Development Authority. The Medium Term Philippine Development Plan 2001-2004. Available at: [www.neda.gov.ph](http://www.neda.gov.ph). DigitalFilipino.com puts the number of Internet users at around two million. See [www.digitalfilipino.com/content.asp?FileName=\statistics\demographics.ini](http://www.digitalfilipino.com/content.asp?FileName=\statistics\demographics.ini).
- <sup>20</sup> Some telecom operators use usage-based local calls but these are a small minority of telephone connections in the country. Some users may be better off moving to usage-based charges, as they would pay much lower fixed monthly charges, but there is strong consumer pressure against giving up "free" local call charges.
- <sup>21</sup> Adam Creed. "PLDT Telephone Metering Plans Suspended." *Newsbytes*. 27 January 1999.
- <sup>22</sup> "The Philippines' Own AOL-Time Warner Deal." Pyramid Research. Perspective. 9 February 2001.
- <sup>23</sup> "An Act to Promote and Govern the Development of Philippines' Telecommunications and the Delivery of Public Telecommunications Services." The Act defines a Value-added Service Provider as "an entity which relying on the transmission, switching and local distribution facilities of the local exchange and inter-exchange operators, and overseas carriers, offers enhanced services beyond those ordinarily provided for by such carriers." <http://www.ntc.gov.ph/laws/ra7925.html>.
- <sup>24</sup> <http://www.acnielsen.com.ph/news.asp?newsID=43>.
- <sup>25</sup> This is a projection based on the NSO 1994 Functional Literacy, Education and Mass Media Survey, which put the number of households with a PC at 1.15 per cent. <http://www.census.gov.ph/data/sectordata/1994/fl9401mm.txt>.
- <sup>26</sup> "CyberWorld Opens Five New Outlets." Press Release. 23 April 2001. [http://www.philweb.com.ph/NEWS/2000/p\\_apr23\\_01\\_cw\\_five.htm](http://www.philweb.com.ph/NEWS/2000/p_apr23_01_cw_five.htm).
- <sup>27</sup> Michael Zielenziger. "The Internet is Divine. Catholic Church Expands Reach as Philippines' Top ISP." *San Jose Mercury News*. 28 December 2000.
- <sup>28</sup> Philweb, CBCPNet Forge Strategic Alliance." *Press Release*. 21 June 2000. [http://www.philweb.com.ph/NEWS/2000/p\\_jun21\\_cbcpcp.htm](http://www.philweb.com.ph/NEWS/2000/p_jun21_cbcpcp.htm).
- <sup>29</sup> Melvin Calimag. "Philippines' Catholic Church In Fight Against Net Porn." *Newsbytes*. 27 January 2000. <http://www.newsbytes.com/news/00/142873.html>.
- <sup>30</sup> "Multimedia to spur Asia GPRS handset uptake." *Total Telecom*. 5 September 2001. [www.totaltele.com/vprint.asp?xtid=43461](http://www.totaltele.com/vprint.asp?xtid=43461).
- <sup>31</sup> Michael Zielenziger. "Across the Philippines, Fast-Flying Fingers Type Messages on Cell Phones, Fuelling a Middle-Class Revolt Against President Who is Charged With Graft. Movement to Impeach Estrada Accelerated by New Technology." *San Jose Mercury News*. 12 December 2000.
- <sup>32</sup> For example PLDT's TXT 135 service had 100'000 subscribers in April 2001, just two months after launching. TXT 135 allows customers to send text messages to PLDT's mobile subscribers (i.e., those on the SMART and Pritel networks). "PLDT's TXT 135 Now has more than 100'000 subscribers." Press Release. 26 April 2001.

### 4. ICT in Government, Education, Health and Business

#### 4.1 Government

Government computerization in the Philippines goes as far back as 1959, when an IBM mainframe computer was installed in the Bureau of Lands. Computerization reached a peak in the late 1960s and early 1970s through the 'evangelistic' efforts of then Executive Secretary Alejandro Melchor.<sup>33</sup> The National Computer Centre (NCC) <[www.ncc.gov.ph](http://www.ncc.gov.ph)> was established on 12 June 1971 for government computerization. The early Information and Communication Technologies (ICT) drive subsequently lacked a champion and the Philippines fell behind other South East Asian nations.

More recent attempts to reinvigorate ICT have had mixed success. In 1994, the government adopted the National Information Technology Plan 2000 (NITP2000) its first ICT strategic plan. The National Information Technology Council was created to serve as the nation's top ICT policy organ and to implement NITP2000. In February 1998, IT21 was launched as a guide to the nation's ICT development through the early part of the 21<sup>st</sup> century. A Government Information Infrastructure was to be developed via an online network for government agencies and eventually extended to academia and the public, the Republic of the Philippines Web (RPWEB).<sup>34</sup>

Few of these plans lived up to expectations due to ongoing funding shortages, infighting and security issues. There is no overall government budget policy for ICT. Each department (in the Philippines ministries are called departments) has to apply annually to the Department of Budget and Management (DBM). Thus, there is no coordinated evaluation of government ICT expenditures and no framework for

prioritising requests. Nor has there been sustained allocation of resources. An allocation made one year could be denied the next, midway through a project.

In an attempt to place the Philippines at the centre of South East Asian ICT development, an overhaul of government strategies and plans is underway. The year 2000 saw:

- The *Government Information Systems Plan* (GISP) adopted<sup>35</sup>;
- The *Electronic Commerce Act* passed<sup>36</sup>; and
- The National Information Technology Council and Electronic Commerce Promotion Council merged into the *Information Technology and Electronic Commerce Council* (ITECC) <[www.i-philippines.ph](http://www.i-philippines.ph)>.

##### 4.1.1 Online Deadline

The Electronic Commerce Act covers more than just electronic business transactions. It also has a section entitled "*Electronic Transactions in Government.*" It stipulates that all government agencies must accept electronic documents within two years from the passage of the Act (i.e., by June 2002). It also calls for the completion of the RPWEB (the name for the online network of government agencies) by the same date. The Act also specifies that funding for getting the government online shall be included in the annual budget. There is a loophole in that the acceptance of online transactions by government agencies is dependent on public hearings and the publication of guidelines.

The GISP or Philippine Government Online was approved in July 2000. It

is the nation's masterplan for ICT in government. It lays out strategies and goals as well as specific projects to be implemented. It also discusses financial implications and established deadlines. Specifically, the GISP calls for the necessary infrastructure to be in place and operational before 2010. That deadline is also set for ensuring that every Filipino shall have online access to government information.

ITECC is charged with executing the nation's various ICT strategic plans such as IT21 and GISP as well as providing periodic updates and revising existing plans or establishing new ones as needed. The Council is composed of the Secretaries (i.e., ministers) of key departments involved with ICT and is the ICT advisor to the President and Congress. It is chaired by the President of the Republic of the Philippines and co-chaired by the Department of Trade and Industry and a representative of the private sector. Other members include the Secretaries of the Department of Management and Budget; Department of Transportation and Communication; Department of Education, Culture and Sports; Department of Interior and Local Government; Director-General of the National Economic and Development Agency and the Managing Director of the National Computer Centre. There are also six representatives from the private sector representing academia, consumer and business organizations involved with ICT.

The Electronic Commerce Act and GISP are ambitious in their goal of getting the Philippine government online as quickly as possible. For most departments and agencies, this will be very difficult to achieve, as their current ICT status is low. Around one per cent of national government personnel work in ICT.<sup>37</sup> A survey by NCC in 1999, based on 300 out of 819 government agencies that replied, found varying levels of computerization in the government and suggests that there has been underinvestment by the government for informatin infrastructure.<sup>38</sup> Some 80 per cent of computers installed were

actually working and 75 per cent were actually being used. Some 44 per cent of agencies had a Local Area Network (LAN) while only twelve per cent had a Wide Area Network (WAN), suggesting that few are connected to their regional offices. Some three quarters had Internet access, around a third had e-mail and 38 per cent had a web site. Only one per cent supported some type of e-commerce application. It should be noted that the survey is based on results of less than half of government agencies and is likely to have been completed by those most active in ICT. Therefore, the actual level of government computerization is undoubtedly lower. The government invested around seven billion pesos (US\$ 136 million) during the 1990s for ICT equipment and projects.<sup>39</sup> In order to implement the GISP, funding at least three times greater (around 23 billion pesos (US\$ 447 million)) will be needed over the next six years.

Eliminating graft and corruption is a major concern of the government and it feels ICT can help in this area by making transactions more transparent. The Department of Budget and Management's Electronic Procurement System (EPS) <<http://www.procurement-service.net/Default.Asp>> provides Internet-based services such as a "Public Tender Board" for procurement notices; a catalogue and virtual store for transactions with government agencies; and a suppliers registry to provide agencies with a common source list of approved vendors. A related effort to reduce corruption is the Transparent Accountable Government project (see Box 4.1).

#### 4.1.2 Budding applications for the e-Citizen

While the government has mostly relegated the role of ICT infrastructure provision to the private sector, it is the key player in terms of providing its own information and services online to citizens. Though there are many informal listings of Philippine public sector web sites, the official government portal is at <http://www.gov.ph>. At December 2000, there were

### Box 4.1: e-whistleblower

Transparent Accountable Government (TAG, [www.tag.org.ph](http://www.tag.org.ph)) is an anti-corruption site that collects anecdotes, runs surveys, investigates and reports on corruption. The investigative reports range from local issues such as 'Local Officials Profit from Garbage', to national issues such as 'Estrada and Associates Monopolize Gambling'. The case studies and public opinion surveys are equally wide in their purview. Jointly organized by the Asia Foundation, Social Weather Station, the Philippine Centre for Policy Studies at the University of the Philippines, the Philippine Centre for Investigative Journalism and the Makati Business Club, TAG has been calling for the transparency that e-government can bring for years. TAG's objectives are to:

- Document perspectives among various sectors of the business community and general public concerning corruption as it relates to doing business in the Philippines;
- Identify and analyse key areas of corruption and quantify their economic costs; and
- Focus business and public attention on how particular areas of corruption affect the conduct of business and economic growth in the Philippines, and build consensus on a concrete agenda for counter-corruption reform.

The TAG is not alone. Its site lists 70 other anti-corruption organizations active in the Philippines.

232 government agencies with an Internet connection; 115 had their own web sites. This is out of a total of 415 federal government agencies. There is a tremendous amount of potential in this area to get more agencies online and applications developed, perhaps led by a new ICT ministry.

There is a number of budding public e-services available for Philippine citizens:

- In addition to providing traditional statistical information on its web site, the National Statistics Office (NSO) <<http://www.census.gov.ph>> is in the midst of a project to digitise over 100 million civil registry documents such as birth, marriage and death certificates.<sup>40</sup> This 2.1 billion pesos (US\$ 40.7 million) project will allow citizens to obtain records much more quickly than in the past. The Department currently provides online information about how citizens can go about obtaining records including fees to be paid and maps to the NSO offices. Citizens can also fill in the request online and have the relevant records mailed to them.
- The Social Security System (SSS) is in the process of issuing national ID cards that can be

used at special kiosks to obtain information (see Box 4.2). This will eventually be extended to ATMs. The SSS web site also allows users to download popular forms.

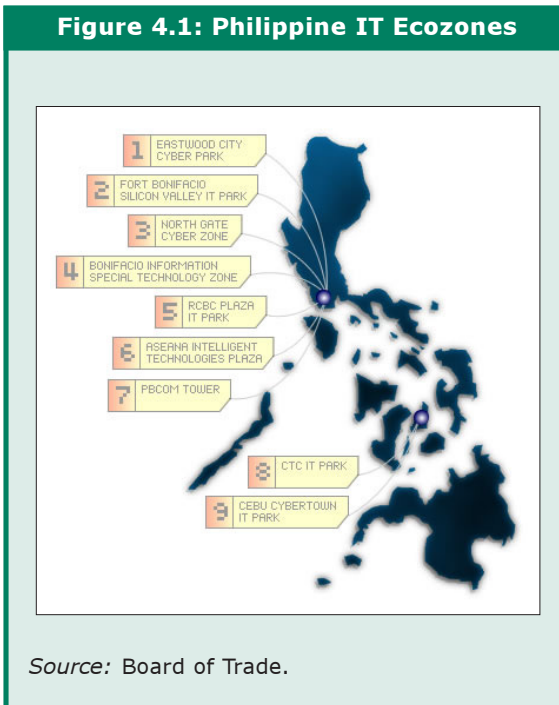
- The Filipino tax authority, the Bureau of Internal Revenue, is implementing e-filing, an online tax payment system. The initial trial of the five million pesos (US\$ 163'000) system allows 750 large taxpayers and 2'000 employees of the agency to pay their taxes online. The system will eventually be extended so that theoretically all of the Philippines' eleven million tax payers could file their returns online.

#### 4.1.3 Ecozones

The Government's role in promoting ICT includes the establishment of laws, regulations and incentives to encourage the use of ICT as well as encourage private investment in ICT. The Philippine Government has promulgated a series of laws that establish an environment in which ICT-intensive activities can flourish.

One area that the government is particularly keen to promote is the establishment of the Philippines as the "e-services hub of Asia." Specifically this means attracting high-tech companies to invest in specially designated IT

**Figure 4.1: Philippine IT Ecozones**



Source: Board of Trade.

economic zones (*ecozones*). There are tax holidays and other incentives for companies locating in the IT ecozones.<sup>41</sup> The ecozones have advanced ICT infrastructure such as broadband access and top-notch human resources. Of the nine IT ecozones, seven are in Manila, and two are in Cebu. All are privately owned and run. One vision is to use the ecozones to complete in the offshore software development market, leveraging its abundant supply of skilled human resources.

#### 4.2 Health

The Department of Health (DOH, <http://www.doh.gov.ph/>) must not only deal with

#### Box 4.2: Computerizing social security

The second largest database in the Philippines belongs to the Social Security System (SSS, <http://www.sss.gov.ph/>). SSS is charged with protecting those employed in the private sector (including the self employed but not in the informal economy) from hazards of disability, sickness, maternity, old age, death and other contingencies resulting in loss of income or financial burden. The SSS also provides soft loans to members for investment purposes. With 4'000 employees in 146 regional and extension offices, and a budget of 7 billion pesos, the work of the SSS is extensive and the ICT operation critical.

In 1962, the need for a computerised system was recognised in order to automate members' contributions. The first SSS computer had a tiny memory and no built in operating system. The lease of a mainframe in 1970 provided greater sophistication and more extensive processing of loans and benefits. However, branch offices still only served as receiving stations for claims and applications that were forwarded to the head office for processing. In 1990, the system was upgraded again to a client-server environment on a LAN, which is now being extended to a wide area backbone.

The 1998-2002 Information System Plan identifies 26 systems to be developed and integrated to insure interoperability. These include management, financial,

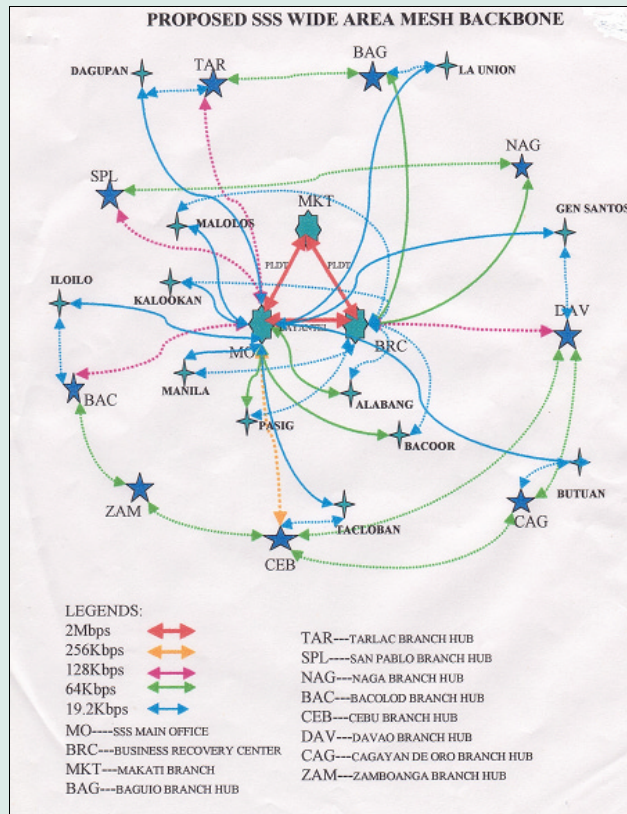
investment, member information and personnel system. One partially implemented application is the biometric ID card (a thumbprint identifies the member).<sup>42</sup> The card enables links to database listings for the individual. Some members can interrogate themselves via the Internet. As at September 2001, three million cards had been distributed. With 23 million members, it was deemed essential to start this slowly.

The SSS currently employs some 4'000 regular staff. Its computing power includes 2'356 workstations; 129 notebooks; 23 processing centres. It process over one million transactions a day on a database with almost 350 million records. Total SSS operating expenses (last 8 yrs) were 16.5 billion pesos, total IT expenditure was 4.5 billion pesos (70% hardware, 18% software, maintenance 9% supplies 2%, and training 0.18%).

Transactions with employers are largely undertaken through EDI (400'000) or via 'sneaker net' (hand delivery of disks for the 10 per cent of employers with computers, but without EDI or Internet). SSS 'seeded' the use of computers among employers by offering loans at favourable conditions for buying computers and computerising payrolls in order to automate deductions to SSS). Relationships with banks are not as smooth. Wherever possible, benefits are paid by direct credit; cheques are almost a thing of the past.



**Figure 4.2: Proposed Social Security Wide Area Network**



Source: Board of Trade.

primary and preventative health measures but also with chronic and emergency care. This role would be much easier with automated information systems but with only 30 per cent of the staff using computers, and these mostly in the head office, the task is daunting. The aim of the DOH in using ICT is to achieve better efficiency and effectiveness in enforcing health regulations. The limited manpower and geographical presence compared to the pervasiveness of health institutions requires appropriate systems to store and update information to improve supervision and monitoring. The proposed system will provide computer-aided hospital management that

will benefit the hospitals' operations as well as its reporting functions to DOH. It will also enable links through to academic institutions and private health institutions pioneering telemedicine.

The DOH web site contains a variety of useful information including statistics, description of policies and programmes, Frequently Asked Questions (FAQs) on diseases and listings of health institutions and practitioners in the country. It also provides information about doing business with DOH with forms for procurement of supplies and equipment and licensing provided online. It also provides a chat and message board service.

There are some private and public initiatives to use ICT in health services. One initiative is that of a local ISP, PhilWeb, and its partnership with a US telemedicine firm, MDVista, to offer medical services online to doctors including test results and information.<sup>43</sup> The National Telehealth Centre, part of the University of the Philippines (UP) in Manila, was established in June 1998 to explore ICT health applications. The Philippine General Hospital has been involved in a telemedicine project with the UP College of Medicine for a number of years. The project offers tele-like applications for dermatology, pathology, radiology and surgery.<sup>44</sup> In 1999, an electronic claims processing system was launched that links hospitals, insurers, health maintenance organizations, clinics and physicians. Funds and claims are transferred and processed electronically.

There are several portals being developed under the auspices of the Department of Science Technology



and the Philippine Council for Health Research and Development (PCHRD). The e-Health Village <<http://www.pchrd.dost.gov.ph/e-Health/>> aims to provide researchers with information. The cute, bi-lingual village-like graphical environment aims to give the site a more Filipino-like feel. The PCHRD has also launched a web page-Health Research and Development Information Network (HERDIN)-that provides extensive bibliographic referencing information. It is based on their award winning CD-ROM that contained a list of all medical papers published by Filipino specialists since 1906 as well as full-text from over fifty journals.<sup>45</sup>

### 4.3 Education

Public education in the Philippines suffers from chronic shortages (e.g., lack of classrooms, textbooks, electricity, etc.), not least of which are computers and Internet access.<sup>46</sup> While these shortages are most severe at the elementary level, they continue through high schools, and to a lesser extent to the universities. The educational system also faces debates over policy. For example there is conflict about whether education should be in English or local languages. One drawback with the English only policy is that there are not enough qualified teachers. The quality of the education system is also questioned with Filipino students ranking low on national and international tests. Keeping youth in school is also a challenge. According to one educator, "... of every 100 six-year olds in the Philippines, only 97 enter first grade, only 60 complete their elementary education, only 50 enrol in secondary education, only 30 complete their secondary education, only 20 enrol in higher education, only 12 earn a collegiate degree, and only 4 are later employed in a job aligned with the degree they have earned."<sup>47</sup> One consequence is that those that can afford to, send their children to private schools.

Private schools have played a historically significant role in the Philippines. This dates back to the

1600s and Spanish colonisation where a network of parochial schools was established across the nation. Today seven per cent of children at elementary and 23 per cent at high school enrolled in private schools; 79 per cent of all tertiary schools are private. These are largely Catholic schools that range from single rooms at the village level to expensive schools catering to the children of the elite. The Catholic Education Association (CEAP [www.ceap.ph/about](http://www.ceap.ph/about)) represents 1'173, approximately half of the Catholic schools in the Philippines. Catholic schools in the barangays have more in common with the strapped-for-cash public schools than with the wealthy schools in the cities.

#### 4.3.1 Higher education

There are some 1'300 tertiary institutions enrolling over two million students. Information about how many have computers, Internet access or web sites is not centrally collected. There was a Commission on Higher Education (CHED [www.info.com.ph/~chedco](http://www.info.com.ph/~chedco)) project started in 1996 to computerize public and private universities.<sup>48</sup> Some 973 institutions benefited from the 251 million pesos (US\$ 4.8 million) project, which came to a close in January 1998. A second phase was allocated 15 million pesos (US\$ 291'000) while a third phase was cancelled because of a lack of government funding. Those that can afford to, generally private universities, often establish their own leased line Internet connectivity directly via ISPs. One trend has been partnership between universities and ISPs to set up Internet cafés at campuses.<sup>49</sup>

A number of leading universities first became connected to the Internet as part of the Philippine Network Foundation project coordinated by the Department of Science and Technology (DOST). Indeed the first institution to establish a connection was the University of San Carlos in Cebu. However, this early effort has not evolved into the sort of broadband academic networks found in other countries where the educational sector



was an early promoter of the Internet. There is a proposal to build the Philippine Research, Education, and Government Information Network (PREGINET), a high-powered research and academic network.<sup>50</sup>

Some universities have implemented online features such as downloading application forms, checking test scores and exchanging e-mails with teachers. Philcampus, a site of the ISP Philweb, enables students to enrol, buy books and reserve accommodation online. Universities in Cebu and Visayas are partners.

The large spread out area of the Philippines make distance education attractive. The University of the Philippines launched its Open University (UPOU) <[www.upou.org](http://www.upou.org)> programme in 1995. Consisting of 17 branches across the country, UPOU has graduated over 1'600 students since it was established. UPOU offers some 100 courses in 17 degree programmes from bachelors through doctorate.

### 4.3.2 Primary and secondary

The Department of Education, Culture and Sport (DECS), now Department of Education (DEPED), <http://www.deped.gov.ph> is charged with overseeing primary and secondary education in the nation. All of the 16 offices, bureaus and

national centres listed as DEPED organizations have web sites. DEPED employs 500'000 nationally, of which 400'000 are teachers. There are 1'000 staff in the head office, which has some 500 computers, 15 of which are connected to a LAN.

The Government does not have a master plan for ICT in the classroom. At the elementary level, there are no policies for either ICT infrastructure or curriculum. While the twelve million students at public elementary schools have no government-implemented access to ICT, the some one million pupils at private schools may have access through community and voluntary initiatives. For example, the Catholic Church is working to wire some of its elementary schools while private charities such as the Ayala Foundation provide some schools with computers.

An ICT curriculum is being designed for high school. The content has not been finalised, but is planned to be part of a revised Technology and Home Economics curriculum. The plan is for students to receive hands on training in the use of software applications including word processing, spreadsheets and use of the Internet. One priority for the success of the curriculum is to increase the number of high schools with computers and Internet access.

There are several programmes to increase the number of PCs in secondary schools. Of some 4'209 (1998/99) public high schools, 3'000 have no computers and only two per cent have access to the Internet.<sup>51</sup> A 1996-2000 programme (Department of Education, Culture and Sports Computerization Programme) is illustrative of the gap between goals and achievements that beset Philippines government funded projects. The 1996 allocation of 375 million pesos (US\$ 7.2 million) was partly spent on training 656 teachers and partly unspent. The 1997 allocation was cut to 40 million pesos (US\$ 770'000) while the cost of computers soared due to exchange rate depreciation. The number of computers to be purchased was reduced by 60 per cent. The

**Table 4.1: Philippines@High School**

Secondary schools, 2000-2001 academic year, latest estimates

Number of schools	7'509
Public	4'336 (58%)
Private	3'173 (42%)
Number of students (000s)	5'379
Public	4'157 (77%)
Private	1'221 (23%)
Number of public schools with PCs	1'334 (31%)
Estimated number of public schools with Internet access	87 (2%)

Source: ITU adapted from DECS, ITECC.

number of recipient schools was reduced to 624 high schools (from 3'900); the number of computers to each school was reduced to twelve per school in 1999. The schools selected were leading schools and the science high schools and those with electricity and air conditioning for the PCs.

Another project under the Adopt a School Programme is *Personal Computers (PCs) for Public Schools*. Launched by the Department of Trade and Industry in May 2000, the project is aimed at ameliorating the low level of ICT equipment and access in the nation's public high schools. Starting with a 600 pesos (US\$ 11.75) million grant from Japan, the government is seeking additional donations of new or used computers and related equipment from private companies and foreign donors.<sup>52</sup> One thousand high schools are expected to benefit from this scheme. In addition to 20 PCs each, the schools will receive training and IT curriculum development support.<sup>53</sup> The Foundation for Information Technology Education and Development (FIT-ED) is encouraging telecommunications firms to provide free Internet connectivity to 1'000 schools.<sup>54</sup>

Another programme through which under-privileged high schools are receiving PCs is the Microsoft Philippines' Connected Learning Community (CLC) programme.<sup>55</sup> The programme started in 1999 when three high schools were given PCs. Since then an additional five have been added to the list. Each school receives eight PCs, digital camera, printer, scanner and one-year free subscription to the Internet.

One way of penetrating more schools with ICT is through mobility. The DOST has four mobile IT classroom buses built by Daewoo at a cost of 7.3 million pesos (US\$ 142'000) each.<sup>56</sup> They can accommodate 32 students each. Started in 1998, the buses go to primarily rural areas and have exposed over 18'000 students at some 300 elementary and secondary schools to computer technology.

### 4.3.3 ICT human resources

The government regularly touts the attraction of the Philippines as a software development location. It often cites a report ranking Filipino ICT workers high in a global comparison.<sup>57</sup> Other attractions include the third largest English speaking country in the world and low wage rates. The quality of Filipino computer workers is such that perhaps as many as 100'000 Filipino IT workers were engaged outside the country in 2000.<sup>58</sup> While this presents an opportunity to the individual, it is a challenge to Philippine companies and for the government. There is something of a hierarchy with the government-trained staff being headhunted by industry where they are exposed to more commercial ideas, and then the international brain drain taking some of the most able.

There are a number of ways the country hopes to expand and improve its ICT training. This will help boost its attraction as a venue for foreign ICT investments, assisting the propulsion of the nation into a Newly Industrialized Country (NIC). In 1993, the number of IT workers was put at 30'000 and the Philippines is currently churning out the same amount each year.<sup>59</sup> Nevertheless, with the brain drain and estimated domestic requirement of over 350'000 high-tech workers, urgent measures are needed.<sup>60</sup>

At the vocational and higher education level, there are around 200 training centres that offer popular short-term training courses in Information Technology. Some 30 universities have degree programmes in computer-related disciplines. The number of college and university students taking ICT courses has risen dramatically from less than 200'000 during the 1998/1999 school year to over 300'000 in 2000/2001. There is concern that the quality of the courses needs to be improved. One way is to apply and improve certification such as ISO 9001. The CHED plans to revise standards for information technology education to take place for the 2002-2003 school year.

### Box 4.3: "I Love You" and Filipino computer programming talent

The infamous May 2000 "I Love You" virus caused an estimated US \$ 10 billion of damage to computer systems worldwide. The source of the virus was traced back to the Philippines making some in the country proud of being able to prove their programming skills to the world. It also caused a

rush of enrolments in Filipino computer courses.<sup>62</sup> A more formal recognition of the country's software skills was the Microsoft 2001 All-Star Award to a 24-year old Filipino programmer. He beat out some 500 other software developers from around the world.<sup>63</sup>

There are a number of public and private initiatives to increase IT training. The Department of Science and Technology and Information Technology Foundation of the Philippines have a joint Virtual Centre for Technology Innovation in IT that plans to churn out 10'000 certified professionals in five years. IBM established a training programme with a local university as far back as 1991. Cisco established its first Networking Academies in the Philippines in 1998 and now has 49 local and seven regional ones in the country. They provide a structured training programme in networking and Internet technology. They are mostly established in vocational high schools and universities. Cisco is also participating in an Ayala Foundation project to bring out-of-school youth up-to-speed to enable them to enter the Networking Academies.<sup>61</sup> India's NIIT has also recently opened in the Philippines.

#### 4.4 Electronic commerce

E-commerce in the Philippines received a big boost in June 2000 with passage of the *Electronic Commerce Act*.<sup>64</sup> The Act facilitates computerized transactions by giving electronic messages and electronic signatures legal status. The Act makes hacking and software piracy a crime and provides for privacy and confidentiality. It is modelled on the UN Commission for International Trade Law (UNCITRAL) Model Law on Electronic Commerce to enhance international uniformity and enforcement. The Department of Trade and Industry, Department of Budget and Management (DPM) and the Central Bank are charged with carrying out the provisions and enforcement of the Act.

Specifically the DBM is charged with coming up with funding for implementation while the Central Bank is responsible for banking-related aspects. The three organizations must provide quarterly reports to Congress on implementation of the Act.

E-commerce revenues in the Philippines were pegged at US\$ 250 million in 2000, estimated at US\$ 770 million in 2001 and forecast to rise to US\$ twelve billion by 2004.<sup>65</sup> The National Statistical Office plans to overcome the lack of official statistics on e-commerce activity by introducing relevant questions in future surveys.

The financial sector has been an early embracer of on-line business. The Philippine Stock Exchange <[www.pse.org.ph](http://www.pse.org.ph)> is online, as is the Securities and Exchange Commission <[www.sec.gov.ph](http://www.sec.gov.ph)>. By the end of June 2001, 155 banks (out of 938) had e-mail addresses or their own web sites and some 30 were offering e-banking services.<sup>66</sup> Given the popularity of mobile text messaging, some financial institutions provide mobile banking services. For those without Internet access, First e-Bank provides customers special kiosks at branches to conduct online banking.<sup>67</sup>

Business to business (B2B) e-commerce got a big push with the creation of *BayanTrade* <[www.bayantrade.com](http://www.bayantrade.com)> a consortium of some of the country's biggest conglomerates: Aboitiz Equity Ventures, Ayala, BenPres, JG Summit, PLDT and United Laboratories.<sup>68</sup> Since BayanTrade was established in June 2000, it has spent a year linking up and consolidating online relationships between the six consortium founders

and 150 member companies. BayanTrade hopes to ward off competition by offering non-members the same efficiency savings that the members enjoy. Another B2B development is the launching of agricultural information for the nation's farmers on the B2BPriceNow web site <[www.b2bpricenow.com](http://www.b2bpricenow.com)>. They can obtain commodity pricing information or offer to supply goods at local Internet access centres or over mobilephones.

An attractive Business to Consumer (B2C) market is the some one million

Filipinos working abroad.<sup>69</sup> They have higher incomes and better access to the Internet than the average citizen at home. For example, it is estimated that around thirty per cent of Filipinos in the US are Internet users. PhilWeb, a local dot-com, hopes to cash in on this group through the provision of online remittance services (overseas Filipinos transferred US\$ 6 billion back home in 2000).<sup>70</sup> Its [www.epadala.com.ph](http://www.epadala.com.ph) site allows users to transfer cash to family anywhere in the Philippines in between one hour to three days.

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<sup>33</sup> <http://www.ncc.gov.ph/aboutNCC.asp?a=an1&an1=7>.

<sup>34</sup> Administrative Order 332 and House of Representatives Resolution 890.

<sup>35</sup> <http://www.neda.gov.ph/GISP/Default.htm>.

<sup>36</sup> [http://www.i-philippines.ph/filebank/Ecommerce\\_2000.pdf](http://www.i-philippines.ph/filebank/Ecommerce_2000.pdf).

<sup>37</sup> This figure is derived based on the number of government agencies that responded to a survey. See Philippines Statistical Yearbook. NSO. "Information Technology Manpower Resources in the National Government."

<sup>38</sup> NCC. 1999 Survey on the Level of Computerization in the Government." [www.ncc.gov.ph](http://www.ncc.gov.ph).

<sup>39</sup> <http://www.neda.gov.ph/GISP/Default.htm>.

<sup>40</sup> <http://www.census.gov.ph/data/pressrelease/2000/pr0048tx.html>.

<sup>41</sup> [http://www.i-philippines.ph/filebank/Guidelines\\_IT\\_Parks\\_6Oct99\\_Final.pdf](http://www.i-philippines.ph/filebank/Guidelines_IT_Parks_6Oct99_Final.pdf).

<sup>42</sup> May Catherine C. Ciriaco. *Developing and Implementing The Philippine Social Security ID System: A Large-Scale ID Application Using Biometrics*. <http://www.sss.gov.ph/docs/ssid.pdf>.

<sup>43</sup> "Philippines to expect first On-line Diagnostic Clinic for teleradiology with US university hospitals." *Virtual Medical Worlds Monthly*. 14 August 2000. <http://www.hoise.com/vmw/00/articles/vmw/LV-VM-09-00-26.html>.

<sup>44</sup> Alvin B. Marcelo. "Telemedicine: the UP-PGH Approach." *Symposium on Developing the Next Generation Internet in the Philippines*. 25 April 2001. Quezon City. <http://ai3.asti.dost.gov.ph/ngi/up-pgh/up-pgh.pdf>.

## 4. ICT in Government, Education, Health and Business

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- <sup>49</sup> [http://www.philweb.com.ph/NEWS/2000/P\\_nov\\_14\\_cic.htm](http://www.philweb.com.ph/NEWS/2000/P_nov_14_cic.htm).
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- <sup>70</sup> See "Overseas Filipino Workers' Remittances by Country & by Type of Worker" on the Bangko Sentral ng Pilipinas web site: <http://www.bsp.gov.ph/Statistics/spei/tab10.htm>.

## 5. Conclusions

### 5.1 State of the Internet

The Mosaic Group <[www.agsd.com/gdi97/gdi97.html](http://www.agsd.com/gdi97/gdi97.html)>, has developed a framework for characterizing the state of the Internet in a nation. They consider six dimensions, each of which has five ordinal values ranging from zero (non-existent) to four (highly developed). The dimensions are as follow:

- Pervasiveness:** a measure based on users per capita and the degree to which non-technicians are using the Internet.
- Geographic dispersion:** a measure of the concentration of the Internet within a nation, from none or a single city to nationwide availability.
- Sector absorption:** a measure of the degree of utilization of the Internet in the education, commercial, health care and public sectors.
- Connectivity infrastructure:** a measure based on international and domestic backbone bandwidth, exchange points, and last-mile access methods.
- Organizational infrastructure:** a measure based on the state of the ISP industry and market conditions.
- Sophistication of use:** a measure characterizing usage from conventional to highly sophisticated and driving innovation.

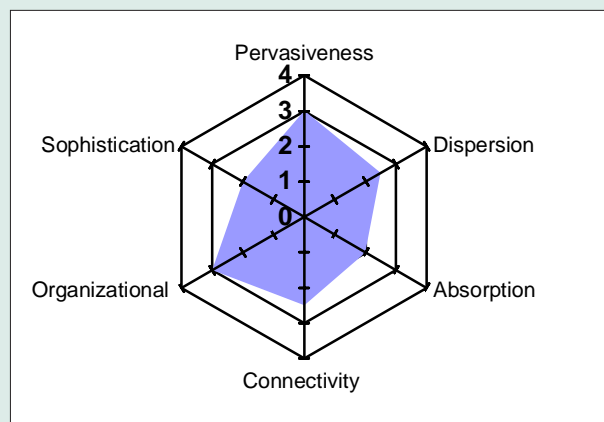
Philippine values for these dimensions are shown in Figure 5.1.

**Pervasiveness** is rated at level 3, *Common*. At December 2000, there were an estimated 1.54 million Internet users in the country or two per cent of the population.<sup>71</sup>

**Geographic dispersion** is rated at level 2.5, between *Moderately* and

Figure 5.1: State of Internet in the Philippines

Dimension	Value
Pervasiveness	3
Geographic Dispersion	2.5
Sectoral Absorption	2
Connectivity Infrastructure	2.5
Organizational Infrastructure	3
Sophistication of Use	2
<b>TOTAL</b>	<b>15</b>



Note: The higher the value, the better. 0 = lowest, 4 = highest.  
Source: ITU.



*Highly dispersed.* Internet access is available in cities and municipalities in most provinces, generally as a local call. However, it is not widely available in rural areas due to a lack of telecommunication infrastructure.

**Sector Absorption** is rated at level 2, *Moderate*. This ranking is a function of the type of connectivity in education, government, health care and business. Internet access is available from all universities and approximately one third of public secondary schools. Some 230 government agencies have Internet access of which around half have web pages. The Ministry of Health has its own web site. Usage in the business sector is growing.

The **Connectivity Infrastructure** is at level 2.5, between *Expanded* and *Broad*. International connectivity is estimated at over 250 Mbit/s. There are a number of POPs outside of the capital but there is no nationwide public Internet backbone. There are several domestic Internet exchanges but none that connects all ISPs. Leased lines, fixed wireless, ADSL and cable modem for broadband local access are available.

The **Organizational Infrastructure** is at level 3, *Competitive*. There are an estimated 50 operational Internet Service Providers (ISPs) in the country. Market entry is straightforward, requiring only registration with the telecommunication regulator and payment of a nominal fee. However, ISPs are not allowed to provide their own infrastructure and must lease it from licensed telecommunication carriers.

**Sophistication of Use** is at level 2, *Conventional*. The most popular applications among most users appear to be e-mail, browsing and chatting. Games are also popular. More sophisticated applications are in use or being developed, for example e-marketplaces for electronic commerce or offshore software development. However, they tend to be limited to niche areas.

## 5.2 Recommendations

In the Philippines, the first steps towards market deregulation actually *preceded* the large-scale development of the Internet. This situation is relatively unusual in developing countries. Market deregulation has benefited the industry, which is characterised by relatively unfettered market entry and exit, and a vibrant spirit of competition. Market development has been characterised by innovation, both in pricing and in methods of network deployment. There is also a high degree of cross-platform competition, with fixed-line, dial-up, leased line, DSL, cable modems, GSM dial-up, WAP, LMDS, MMDS, satellite and other platforms being used to support Internet services.

One consequence of this highly competitive environment is that Internet prices have been forced down to levels at which it is hard to make a profit. At the low-end of the market, in particular pre-paid cards, quantity has triumphed over quality, and consumers have come to associate the Internet with low speed and unreliable access. Consequently, even though Internet access can be purchased for as little as 20 pesos (around US\$ 0.4) per hour, with no additional metered dial-up costs, the main form of messaging between Philippine consumers is not e-mail or chat, but rather mobile Short Message Service (SMS), where service quality is more reliable (albeit limited in scope). Another consequence of the wild west style market is that there has been no serious attempt to measure the volume of Internet usage in the country and market estimates range from as few as 500'000 to as many as six million users.

Although the Internet in the Philippines is currently going through a tough phase of market consolidation, and intensive price competition, there are good reasons to be hopeful about the future. A number of schemes for enhancing access in rural areas and outlying islands are being launched, and bodies

with a nationwide presence, such as the Catholic Church or the school system, are becoming involved. There is strong potential for mobile Internet and there is already a large number of Internet cafés. The Philippines has the potential to emerge as a regional market leader for Internet access as it already has done for SMS use.

### **5.2.1 Fully liberalize the ISP market**

Although there are no market restrictions on ISPs, in reality they are little more than resellers. Those ISPs that are not part of a telecommunication group cannot build their own infrastructure. One result is that many regions of the country remain poorly served for Internet access. Another outcome is that those ISPs linked to telecommunications operators have an unfair market advantage. The distinction between an ISP and telecommunication operator should be erased. ISPs should be allowed to construct their own networks and permission for doing so should be simplified. In exchange, they would be expected to contribute to universal access goals.

### **5.2.2 Market research**

Reliable and timely information on ICT is lacking in the Philippines. Statistics are often misleading. The use of unreliable and improper statistics is causing serious harm in terms of proper policy analysis. Examples include use of simple rather than functional literacy that gives a distorted account of true literacy in the country. Another example is the prevalent use of telephone capacity rather than telephone lines in service penetration that overstates the true level of telephone access in the country. Data are also incomplete. Data are also widely contradictory as Table 2.6 on mass media access in the country shows. Finally, data are incomplete or lacking in key areas. For example, a 1999 survey of the level of computerization in government only had results from less than half of government agencies. There is no reliable information on the number of

Internet users or subscribers in the nation.

Both the National Telecommunication Commission (NTC) and the National Statistical Office (NSO) compile some statistics on the ICT sector. The NTC publishes data on the number of telephone and mobile cellular subscribers on its web site. The NSO carried out surveys in 1990 and 1994 on household ownership of ICT equipment such as radio, television, PCs and telephones. However, these data are now out-of-date. Unfortunately, the NSO missed an excellent opportunity to update this information in the 2000 Census. It is recommended that the NTC and NSO partner to improve the quality, scope and timeliness of data on the Philippines ICT sector. This should include quarterly updates of industry statistics such as fixed, mobile and Internet subscribers and annual updates of household ICT penetration for television, cable television, fixed and mobile telephones, PCs and Internet subscribership.

### **5.2.3 Internet Exchange**

The Philippines has several Internet exchanges. However, they are not interconnected with consequent repercussions on efficiency and resources. These exchanges should be connected, or combined. The government might also want to consider the establishment of a public, neutral peering point where all ISPs could connect to. This would help drive national e-commerce in the nation by making Philippine web sites easier and faster to get to. The government should also promote the establishment of a nationwide, high-speed public Internet backbone that would boost research and development efforts, local broadband access and connectivity of public institutions such as government offices and schools.

### **5.2.4 Universal access and public training**

Though the government has several policies for promoting universal telephone access (e.g., plans that



called for the installation of telephone lines, subsidized tariffs, providing a public telephone office in all municipalities, the Alternative Communications Programme (ACP), etc.), it does not have a coherent and measurable plan for expanding Internet access. Instead, most public access to the Internet has been met by Internet cafés. Policies should be designed for expanding Internet access such as a clear funding timetable for providing Internet access in schools. Internet cafés should be provided with incentives to expand, particularly in underserved areas. ISPs should be encouraged to extend infrastructure into unserved and underserved areas.

Access alone cannot always solve the problem, though. Since a large part of the working age population is not computer literate, the government should also look into the possibility of providing basic computer and Internet training in public locations. Expanding

ICT courses beyond the schools will also help to increase awareness among a broader part of the population.

### 5.2.5 Coordination

Better coordination is needed to reduce wasteful duplication of resources and simplify procedures. For example, there are numerous agencies responsible for government ICT actions; there are at least three different Internet exchanges and there are three different organizations responsible for domain names.<sup>72</sup> All this causes considerable confusion and overlap. It is recommended that ICT activities dispersed across various government agencies be united in a new Department. Furthermore, the scope of the NTC's regulatory activities should be expanded to cover the entire ICT industry. Distinctions between broadcasting and telecommunications should be erased, at least for the carriage of information.

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<sup>71</sup> This is according to government sources. Another source puts the figure at "around 2 million Filipino Internet Users" which would raise the penetration to 2.6 per cent of the population. See Janette Toral. "DigitalFilipino Philippine Internet Demographics." December 3, 2000. <http://www.digitalfilipino.com/content.asp?FileName=\statistics\demographics.ini>.

<sup>72</sup> According to one Congressman, a single government ICT entity would "virtually eliminate redundant functions and overlapping responsibilities of some government agencies such as the Department of Transportation and Communications (DOTC), the National Computer Centre (NCC), the Department of Public Works and Highways (DPWH), the Department of Science and Technology (DOST) and the National Information Technology Council (NITC)." Note that the NITC has since been merged into the IETTC but the argument still holds true. Joel D. Pinaroc. "Philippines – State of IT in Gov't." *Newsbytes*. 6 November 1998.

## Annex 1: List of meetings

Date	Time	Meeting with:
1 <sup>st</sup> October 2001	09:00	Department of Transportation and Communications Secretary, Undersecretary and Assistant Secretary
1 <sup>st</sup> October 2001	14:00	NTC Telecommunications Policy and Planning Development Department and Broadcast and Telecommunication Sectors  Government departments including Department of Health, Department of Education, Department of Science and Technology, and National Computer Service
2 <sup>nd</sup> October 2001	09:00	Philippine Electronics and Telecommunications Federation (PETEF), and representatives of PLDT, Globe Telecom, EPTI, CAPWIRE, DIGITEL, PHILCOM, PHILCOMSAT, SMART/PILTEL, GLOBE/ISLACOM, EXTELCOM, One Virtual Corp., GV Broadcast, Phil. MultiMedia, Mosaic Com, Pacific Internet, Exchange Communication, AGILE, Infocom, PISO, NTC Commissioner, NTC Deputy Commissioners
2 <sup>nd</sup> October 2001	14:00	Mr. Alfredo B. Carrera, PLDT Ms. Ma. Consuelo (Marion) Trinidad, PLDT Mr. Ramon Santiago, PLDT Mr. Joey S. Limjap, PLDT Ms. Cecilio B. Lorenzo, Infocom Mr. Fortunato de la Peña, DOST Undersecretary Ms. Armela Katigbak, DOST
3 <sup>rd</sup> October 2001	09:00	Meetings with Globe Telecom mobile, data, fixed-line, international carrier business and SMS unit Mr. Ariel C. Ayaay Ms. Josefina C. Alano Ms. Ronald G. Brusola Atty. V. Froilan M. Castelo Mr. Fernando B. Cruz Mr. Emmanuel L. R. Estrada Mr. Rodell A. Garcia Atty Melchor S. Latina Ms. Maria Olivia Limgenco-Clavio Atty. Rodolfo A. Salalima Mr. Nicanor V. Santiago III Mr. Fernando P. Teodoro Mr. Earl R. Villarosa
3 <sup>rd</sup> October 2001	14:30	Mr. Dante M. Vengua, NTC
3 <sup>rd</sup> October 2001	15:30	Mr. William S. Pamintuan, Digitel
3 <sup>rd</sup> October 2001	17:00	Mr. Rogelio Quevedo, Smart Communications Inc Ms. Marie Sunny Sablada, Smart Communications Inc Mr. Rafael T. Malubay, Smart Communications Inc Ms. Pearl Bigata-Santos, Smart Communications Inc Mr. Marlon M. Mendoza, Smart Communications Inc
4 <sup>th</sup> October 2001	08:30	Mr. Albert S. Velasco, MailStation Net
4 <sup>th</sup> October 2001	10:00	Mr. Bill Torres, Mosaic Communications
4 <sup>th</sup> October 2001	11:30	Mr. Fernando D. Contreras Jr., PISO / Interdotnet Philippines
4 <sup>th</sup> October 2001	14:00	Mr. Frank M. Ayre III, Sky Cablenet
5 <sup>th</sup> October 2001	08:00	Mr. Mel Velarde, OneVirtual Corp.
5 <sup>th</sup> October 2001	10:00	Ms. Thess Rapanan, NSO

<b>Date</b>	<b>Time</b>	<b>Meeting with:</b>
5 <sup>th</sup> October 2001	13:00	Mr. Albert Sherrin, Department of Trade and Industry
5 <sup>th</sup> October 2001	14:00	Ms Maricris Sarino, Eastwood IT Park Mr Jie Espinosa, Eastwood IT Park
5 <sup>th</sup> October 2001	15:00	Ms. Abba Napa, Broadband Philippines Mr. Cyril Pama, Broadband Philippines

## Annex 2: Acronyms and abbreviations

<b>ADSL</b>	Asymmetric Digital Subscriber Line
<b>AMPS</b>	Advanced Mobile Phone System
<b>ASEAN</b>	Association of South East Asian Nations
<b>B2C</b>	Business to Consumer
<b>Bayantel</b>	Bayan Telecommunications Incorporated
<b>BP</b>	Broadband Philippines
<b>Capwire</b>	Capitol Wireless, Inc.
<b>CBCP</b>	Catholic Bishops Conference of the Philippines
<b>CDMA</b>	Code Division Multiple Access
<b>CEAP</b>	Catholic Education Association
<b>CHED</b>	Commission on Higher Education
<b>CLC</b>	Connected Learning Community program
<b>CMTS</b>	Cellular Mobile Telephone Service
<b>CORE</b>	Common Routing Exchange
<b>DECS</b>	Department of Education, Culture and Sport
<b>DEPED</b>	Department of Education
<b>Digital</b>	Digital Telecommunications Phils., Inc.
<b>DOH</b>	Department of Health
<b>DOST</b>	Department of Science and Technology
<b>DOTC</b>	Department of Transportation and Communications
<b>DTH</b>	Direct-To-Home satellite
<b>EO</b>	Executive Order
<b>EPS</b>	Electronic Procurement System
<b>EPTI</b>	Eastern Telecommunications Philippines, Inc
<b>Extelecom</b>	Express Telecom
<b>FCC</b>	Federal Communications Commission
<b>FIT-ED</b>	Foundation for Information Technology Education and Development
<b>GISP</b>	Government Information Systems Plan
<b>GMCR</b>	Globe-Mackay Cable and Radio (Globe)
<b>GMPCS</b>	Global Mobile Personal Communications by Satellite
<b>GPRS</b>	General Packet Radio Service
<b>GSM</b>	Global System for Mobile Communication
<b>HDI</b>	Human Development Index
<b>HERDIN</b>	Health Research and Development Information Network
<b>ICT</b>	Information and Communication Technology
<b>IGF</b>	International Gateway Facility
<b>Islacom</b>	Isla Communications

<b>ISP</b>	Internet Service Provider
<b>IT</b>	Information Technology
<b>ITECC</b>	Information Technology and Electronic Commerce Council
<b>LAN</b>	Local Area Network
<b>LMDS</b>	Local (or Low-power) Multi-point Distribution System
<b>MIX</b>	Manila Internet Exchange
<b>MMDS</b>	Microwave Multipoint Distribution System
<b>MosCom</b>	Mosaic Communications
<b>MTUs</b>	Multi-tenanted units
<b>NCC</b>	National Computer Center
<b>NEDA</b>	National Economic and Development Authority
<b>NIC</b>	Newly Industrialized Country
<b>NSCB</b>	National Statistical Coordination Board
<b>NSO</b>	National Statistics Office
<b>NTC</b>	National Telecommunication Commission
<b>PAPTELCO</b>	Philippine Association of Private Telephone Companies
<b>PC</b>	Personal Computer
<b>PCHRD</b>	Philippine Council for Health Research and Development
<b>Pesos</b>	Philippines National Currency. At 30 June 2001 one United States dollar (US\$) was equivalent to 51.5 pesos
<b>PETEF</b>	Philippine Electronics and Telecommunications Federation, Inc.
<b>PhilCom</b>	Philippine Global Communications, Inc.
<b>PHIX</b>	Philippines Internet Exchange
<b>PHNET</b>	Philippine Network Foundation
<b>Piltel</b>	Pilipino Telephone Corporation
<b>PISO</b>	Philippine Internet Service Organization
<b>PLDT</b>	Philippine Long Distance Telephone Company
<b>PREGINET</b>	Philippine Research, Education, and Government Information Network
<b>PT&amp;T</b>	Philippine Telegraph and Telephone Corporation
<b>Retelcom</b>	Republic Telecommunications
<b>RPN</b>	Radio Philippines Network
<b>SAS</b>	Special Areas Scheme
<b>SIM</b>	Subscriber Identity Module Card
<b>Smart</b>	Smart Communications Incorporated
<b>SMS</b>	Short Messaging System
<b>SSS</b>	Social Security System
<b>TACS</b>	Total Access Communication System
<b>TAG</b>	Transparent Accountable Government

<b>TelicPhil</b>	Telecommunication Infrastructure Corporation of the Philippines
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>UPOU</b>	University of the Philippines - Open University
<b>UP-PGH</b>	University of the Philippines – Philippine General Hospital
<b>VAS</b>	Value-Added Service
<b>VoIP</b>	Voice over Internet Protocol
<b>VSAT</b>	Very Small Aperture Terminals
<b>WAP</b>	Wireless Application Protocol

### Annex 3: Useful links

Organization	Website
<b>Main government-related ICT organizations</b>	
Department of Transportation and Communications (DOTC)	<a href="http://www.oksnaoks.dotc.gov.ph">www.oksnaoks.dotc.gov.ph</a>
National Telecommunications Commission (NTC)	<a href="http://www.ntc.gov.ph">www.ntc.gov.ph</a>
<b>Main ICT providers</b>	
Philippine Long Distance Telephone Company (PLDT)	<a href="http://www.pldt.com.ph">www.pldt.com.ph</a>
Smart Communications, Inc. (Smart)	<a href="http://www.smart.com.ph">www.smart.com.ph</a>
Bayan Telecommunications Incorporated (Bayantel)	<a href="http://www.byantel.com.ph">www.byantel.com.ph</a>
Digital Telecommunications Phils., Inc. (Digitel)	<a href="http://www.digitelone.com">www.digitelone.com</a>
Eastern Telecommunications Philippines, Inc. (ETPI)	<a href="http://www.etpi.com">www.etpi.com</a>
Globe Telecom (GLOBE)	<a href="http://www.globe.com.ph">www.globe.com.ph</a> >
<b>Mass media</b>	
<i>ABS-CBN Broadcasting Corporation (ABS-CBN)</i>	<a href="http://www.abs-cbn.com">www.abs-cbn.com</a>
<i>People's Television Network</i>	<a href="http://www.nbn.ph">www.nbn.ph</a>
<i>Associated Broadcasting Corporation</i>	<a href="http://www.abc5tv.com">www.abc5tv.com</a>
<i>GMA</i>	<a href="http://www.igma.tv">www.igma.tv</a>
<i>Radio Philippines Network</i>	<a href="http://www.rpn9.com">www.rpn9.com</a>
<i>The Manila Times</i>	<a href="http://www.manilatimes.net">www.manilatimes.net</a>
<i>The Philippines Daily Inquirer (INQ7)</i>	<a href="http://www.inquirer.net">www.inquirer.net</a>
<b>Academic</b>	
Commission on Higher Education (CHED)	<a href="http://www.info.com.ph/~chedco">www.info.com.ph/~chedco</a>
Catholic Education Association (CEAP)	<a href="http://www.ceap.ph/about">www.ceap.ph/about</a>
University of the Philippines - Open University (UPOU)	<a href="http://www.upou.org">www.upou.org</a>
Department of Education (DEPED)	<a href="http://www.deped.gov.ph">www.deped.gov.ph</a>
<b>Health</b>	
Department of Health	<a href="http://www.doh.gov.ph">www.doh.gov.ph</a>
Philippine Council for Health Research and Development (PCHRD).	<a href="http://www.pchrd.dost.gov.ph/e-Health">www.pchrd.dost.gov.ph/e-Health</a>
<b>Electronic commerce</b>	
Philippine Stock Exchange	<a href="http://www.pse.org.ph">www.pse.org.ph</a>
Securities and Exchange Commission	<a href="http://www.sec.gov.ph">www.sec.gov.ph</a>
<i>BayanTrade</i>	<a href="http://www.byantrade.com">www.byantrade.com</a>
Online remittance services	<a href="http://www.epadala.com.ph">www.epadala.com.ph</a>
<b>Portals</b>	
Global Pinoy	<a href="http://www.globalpinoy.com">www.globalpinoy.com</a>
Lycos Philippines	<a href="http://ph.lycosasia.com">ph.lycosasia.com</a>
Yahoo Asia	<a href="http://asia.fullcoverage.yahoo.com/fc/Asia/Philippines/">asia.fullcoverage.yahoo.com/fc/Asia/Philippines/</a>
<b>Other</b>	
Catholic Bishops Conference of the Philippines (CBCP)	<a href="http://www.cbcp.net">www.cbcp.net</a>
National Computer Centre (NCC)	<a href="http://www.ncc.gov.ph">www.ncc.gov.ph</a>
National Statistics Office (NSO)	<a href="http://www.census.gov.ph">www.census.gov.ph</a>
Social Security System (SSS)	<a href="http://www.sss.gov.ph">www.sss.gov.ph</a>

## Annex 4: Framework dimensions

Level 0	<i>Non-existent</i> : The Internet does not exist in a viable form in this country. No computers with international IP connections are located within the country. There may be some Internet users in the country; however, they obtain a connection via an international telephone call to a foreign ISP.
Level 1	<i>Embryonic</i> : The ratio of users per capita is on the order of magnitude of less than one in a thousand (less than 0.1%).
Level 2	<i>Established</i> : The ratio of Internet users per capita is on the order of magnitude of at least one in a thousand (0.1% or greater).
Level 3	<i>Common</i> : The ratio of Internet users per capita is on the order of magnitude of at least one in a hundred (1% or greater).
Level 4	<i>Pervasive</i> : The Internet is pervasive. The ratio of Internet users per capita is on the order of magnitude of at least one in 10 (10% or greater).

Level 0	<i>Non-existent</i> . The Internet does not exist in a viable form in this country. No computers with international IP connections are located within the country. A country may be using UUCP connections for email and USEnet.
Level 1	<i>Single location</i> : Internet points-of-presence are confined to one major population centre.
Level 2	<i>Moderately dispersed</i> : Internet points-of-presence are located in at least half of the first-tier political subdivisions of the country.
Level 3	<i>Highly dispersed</i> : Internet points-of-presence are located in at least three-quarters of the first-tier political subdivisions of the country.
Level 4	<i>Nationwide</i> : Internet points-of-presence are located in all first-tier political sub-divisions of the country. Rural dial-up access is publicly and commonly available and leased line connectivity is available.

<b>Sector</b>	<b>Rare</b>	<b>Moderate</b>	<b>Common</b>
Academic - primary and secondary schools, universities	>0-10% have leased-line Internet connectivity	10-90% have leased-line Internet connectivity	>90% have leased-line Internet connectivity
Commercial - businesses with > 100 employees	>0-10% have Internet servers	10-90% have Internet servers	>90% have Internet servers
Health-hospitals and clinics	>0-10% have leased-line Internet connectivity	10-90% have leased-line Internet connectivity	>90% have leased-line Internet connectivity
Public-top and second tier government entities	>0-10% have Internet servers	10-90% have Internet servers	>90% have Internet servers



Sectoral point total	Absorption dimension rating	
0	Level 0	<i>Non-existent</i>
1-4	Level 1	<i>Rare</i>
5-7	Level 2	<i>Moderate</i>
8-9	Level 3	<i>Common</i>
10-12	Level 4	<i>Widely used</i>

		Domestic backbone	International Links	Internet Exchanges	Access Methods
Level 0	<i>Non-existent</i>	None	None	None	None
Level 1	<i>Thin</i>	≤ 2 Mbps	≤ 128 Kbps	None	Modem
Level 2	<i>Expanded</i>	>2 - 200 Mbps	> 128 kbps -- 45 Mbps	1	Modem 64 Kbps leased lines
Level 3	<i>Broad</i>	>200 Mbps -- 100 Gbps	>45 Mbps -- 10 Gbps	More than 1; Bilateral or Open	Modem > 64 Kbps leased lines
Level 4	<i>Immense</i>	> 100 Gbps	> 10 Gbps	Many; Both Bilateral and Open	< 90% modem > 64 Kbps leased lines

Level 0	<i>None:</i> The Internet is not present in this country.
Level 1	<i>Single:</i> A single ISP has a monopoly in the Internet service provision market. This ISP is generally owned or significantly controlled by the government.
Level 2	<i>Controlled:</i> There are only a few ISPs because the market is closely controlled through high barriers to entry. All ISPs connect to the international Internet through a monopoly telecommunications service provider. The provision of domestic infrastructure is also a monopoly.
Level 3	<i>Competitive:</i> The Internet market is competitive and there are many ISPs due to low barriers to market entry. The provision of international links is a monopoly, but the provision of domestic infrastructure is open to competition, or vice versa.
Level 4	<i>Robust:</i> There is a rich service provision infrastructure. There are many ISPs and low barriers to market entry. International links and domestic infrastructure are open to competition. There are collaborative organizations and arrangements such as public exchanges, industry associations, and emergency response teams.

<b>Table 6: The Sophistication of Use of the Internet</b>	
Level 0	<i>None:</i> The Internet is not used, except by a very small fraction of the population that logs into foreign services.
Level 1	<i>Minimal:</i> The small user community struggles to employ the Internet in conventional, mainstream applications.
Level 2	<i>Conventional:</i> The user community changes established practices somewhat in response to or in order to accommodate the technology, but few established processes are changed dramatically. The Internet is used as a substitute or straight-forward enhancement for an existing process (e.g. e-mail vs. post). This is the first level at which we can say that the Internet has "taken hold" in a country.
Level 3	<i>Transforming:</i> The user community's use of the Internet results in new applications, or significant changes in existing processes and practices, although these innovations may not necessarily stretch the boundaries of the technology's capabilities. One strong indicator of business process re-engineering to take advantage of the Internet, is that a significant number (over 5%) of Web sites, both government and business, are interactive.
Level 4	<i>Innovating:</i> The user community is discriminating and highly demanding. The user community is regularly applying, or seeking to apply the Internet in innovative ways that push the capabilities of the technology. The user community plays a significant role in driving the state-of-the-art and has a mutually beneficial and synergistic relationship with developers.