

# Vietnam: ICT Assessment

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*Final Report*

*15-28 September 2001*

# Vietnam: ICT Assessment

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## Management Summary

This ICT assessment has been undertaken at the request of the USAID's Asia Near East (ANE) Bureau in close coordination with the USAID/Cambodia Mission responsible for supporting USAID's development activities in Vietnam, and those individuals actually carrying out USAID's program activities in Vietnam. The on-the-ground ICT assessment activities were carried out during the period of 15-28 September 2001.

The assessment is built around ANE's Bureau's recently updated ICT strategic framework and objectives. The **Principle Objective** of the ANE Bureau's ICT initiative is stated as follows:

*"To foster increased growth and development in ANE countries by strengthening the enabling environment for ICT development and application. This can be achieved by promoting progressive ICT policies and encouraging private sector growth and development applications."*

In supporting this principle objective, and ANE's economic growth Strategic Objective (498-023), a new **Intermediate Result (IR)** has been developed:

*"IR 23.4: Expand ICT Development through Cross-Border Cooperation on Policy Strengthening and Private Sector Development"*

The framework established to support the Bureau's ICT direction is reflective in their updated "3-Ps" orientation:

- 1) **Policy Development**—improving policies, laws and regulations to permit the introduction and growth of information and communications technologies, reducing the barriers to open connectivity, and ensuring that global electronic commerce can take place in an open and transparent fashion,
- 2) **Private Sector Development**—enhancing the capabilities for the development of a strong private sector that will ensure economic growth activities based on helping the spread of ICT applications and developing alliances with the U.S. high tech firms, and
- 3) **People and Application Activities**—supporting ICT development activities and development of ICTs as a platform for even further and broader-based development.

## Summary Findings

The following provides a very brief overview of the findings reflected in greater depth throughout the ICT assessment. In addition to these findings a set of recommendations has been prepared as a result of this assessment and presented to USAID for consideration. These are reflected in a separate document.

- **Policy Development**—In recent years, Information and Communication Technologies (ICTs) have been elevated to a high national priority by the Socialist Republic of Vietnam (SRV). Directives have been put in place as well as a series of ICT Master Plans that reflect a country-wide commitment to leveraging ICTs at the domestic as well as in the international arena. At present telecommunications-related policy/oversight provided by the Department General for Postal and Telecommunications (DPGT). While separate from actual operations, DPGT is not necessarily as independent as would be desirable. There is no Telecommunications Law as such, with direction provided through a series of rules, directives, etc. The government dominates telecommunications operations, though there is some conservative movement to open the sector to an increased level of private sector participation. Currently private sector participation is limited pretty much to investments into State Owned Enterprises (SOEs) via Business Cooperative Contracts (BCCs). Under these BCCs, the private sector (mostly foreign) can invest in SOEs and obtain a return on their investments over a given period of years. The ISP market is just now opening up to allow for private sector ownership. Regarding e-commerce plans are being put in place to address the legal aspects required to allow this to take place within Vietnam, however at present not such enabling legislation exists.
- **Private Sector Development**—The private sector within Vietnam is quite dynamic, and with the focus on ICTs by the government of Vietnam, the ICT-related sectors are especially dynamic. The telecommunications sector is dominated by the government with Vietnam Postal and Telecommunications (VNPT) being the dominant carrier. However, other government owned enterprises also provide expanding telecommunications services, including Saigon Postel, Viettel, and most recently, the Vietnam Electricity Corporation (VEC). Telecommunications and Information Company. There are presently five ISPs in Vietnam, all SOEs, though this sub-sector is being opened up to the private sector. Teledensity has been expanding rapidly in recent years and is currently on the order of 5:100. It is estimated that there are approximately 800,000-1,000,000 PCs in Vietnam, with Internet use being quite low with an estimated 150,000-180,000 subscribers (most likely representing 400,000-600,000 users). Due to the low number of PCs, Cyber Cafés provide a common access vehicle for those without personal or business-provided access to the Internet. Vietnam does have a vibrant and growing high tech sector, with a number of high tech and software parks in place and being planned. It is estimated that there are between 300-500 high tech companies operating in Vietnam, most of which are local, but also with considerable engagement by U.S. high tech companies such as Intel, IBM, Microsoft, Oracle, and others. A government focus has been placed on the software sector with a special focus on growing the sector via exports, with a target of reaching US\$ 500 million in total

software sales by 2005. There is every indication that local non-ICT firms are expanding their use of ICTs within their operations to gain competitive advantage. The education system, while supporting the IT workforce with graduates, needs significant upgrading with regards to numbers and quality of education. The anticipated ratification of the U.S.-Vietnam Bilateral Trade Agreement (BTA) holds much promise for expanding Vietnam's private sector in the near-term future.

- **People and Applications Activities**—With the government's focus on ICTs, and the role of Vietnam's SOEs in the private sector arenas, there are plans being put into place to expand the deployment/application of ICTs within the government. Several of the Ministries have IT Master Plans in place or in draft that reflect a commitment to ICT-enable key functions/activities. This includes working to develop a more ICT-literate workforce, making more ICTs available to their workforce, and expanding E-government services to businesses and citizens. These plans also include extending these services to rural areas in the 61 provinces in Vietnam and even further to communes within these provinces. Several pilot projects are currently being carried out to gain hands-on experience in this arena. These are not only by the government, but also by a number of U.S. high tech firms seeking to introduce ICTs in lower-level education facilities (elementary and lower-secondary schools). Few international donor assistance activities are currently focusing on ICTs within Vietnam, though there is a growing number of education-oriented activities being carried out, some of which deploy and/or support the leveraging of ICTs.

### Summary Analysis

It is widely recognized that if Vietnam is to achieve sustainable growth domestically and compete internationally, it will need to move from a controlled, centrally planned economy to one that permits freer and broader participation of the private sector. As part of this process, it will need to develop and implement a wide range of reforms that will permit greater participation in the world economy. While the Government looks to the IT sector as a strategic opportunity, several important constraints will have to be simultaneously addressed: the lack of IPR protection, restrictions on Internet access, excessive and inconsistent taxation, high telecommunication costs, and weaknesses in the local educational system.

Based on the analysis reflected in this report, the current status of the telecommunications sector in Vietnam is characterized by 1) rapid growth in teledensity in recent years; 2) a government monopoly carried out by several government-owned telecommunications providers; 3) slow and conservative movements toward market liberalization; 4) high costs and poor quality of Internet services, including unequal access between urban and rural areas. Yet, current dynamics are promising. There is an increasingly dynamic software sector emerging in Vietnam that is being supported by the government's commitment to the sector in the form of setting up software parks, creating targeted tax incentives, and waiving restrictions on the Internet. Growth of the IT hardware industry is also evident with approximately 70-75 percent of the PCs being sold in Vietnam being locally assembled. Growth projections for both the hardware and software industries are promising for both domestic and global markets.

The apparently cautious move towards liberalization of telecommunications should accelerate in the next few years, especially in light of the recently ratified U.S.-Vietnam Bilateral Trade Agreement (BTA). There are indications that the new Telecommunications Act being drafted will reflect a more liberalized environment. Further, Vietnam's desire to eventually gain access to the WTO will put pressure on liberalizing the sector. The recent USAID assessment concludes, however, that if Vietnam does not act in a more aggressive manner, there is a high probability that national goals of creating a vibrant IT sector and software industry will simply not be reached. These are largely "weightless economy"<sup>1</sup> sectors that need a high-speed digital highway to be successful. The restrictions and high costs resulting from current policies prevent this from being part of the local business environment, even though the basic infrastructure is in place or there are plans for expanding it to provide the needed capacity. Similar restrictions are in place regarding the licensing of domestic content -- a much needed component.

The lack of a legal infrastructure to support electronic commerce is a significant bottleneck to Vietnam's entry into the global economy. The limited use of credit cards within Vietnam (which is limited to the foreign community and the tourism sector) minimizes the potential of near-term B2C E-commerce. There are also limitations in B2B E-commerce in that some requisite services are blocked by the national firewall (e.g., selected services are blocked by this firewall such that some of the more advanced Internet-based functionality cannot be used in Vietnam). Furthermore, the implementation of solutions envisioned in the Ministry of Trade's Master Plan for E-Commerce will need to be closely coordinated with the e-ASEAN initiative to promote regional harmonization in establishing a common E-commerce framework for the region.

Another important bottleneck to Vietnam's economic goals involves the issue of Intellectual Property Rights (IPR), which constrains the development of both e-commerce and the software industry. While the SRV has signed on to key international agreements that have legal implications, there is virtually no enforcement within Vietnam. It is estimated that 90 percent of the software within Vietnam is illegally copied. While lack of enforcement harms the business operations of such corporations as Microsoft, Oracle, and IBM, local software development houses are also adversely impacted. The government's target goal to grow the local software sector to US\$ 500 million by 2005 is simply unachievable if this current situation is allowed to exist and aggressive action toward improved enforcement is not put in place.

Toward addressing these issues, the ICT Assessment team puts forward the following recommendations for consideration by those engaged in advancing the ICT growth in Vietnam:

- More rapid liberalization of telecommunications is needed to support expanded economic growth;
- A more comprehensive plan is needed to deliver services to underserved rural areas;
- A legal and regulatory environment needs to be developed for e-commerce;

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<sup>1</sup> While definitions vary, the "weightless economy" represents the notion that information and knowledge are increasingly factors of production (much like capital and human resources), and just as there is are manufacturing and service components to our economy, there is also a knowledge component to our economy that encapsulates the unseen or "weightless" elements. See Charles Leadbeater's book, "The Weightless Society."

- Expanded business support services should be strengthened for SMEs;
- The curriculum for IT-related education needs to be upgraded at universities and technical schools;
- Internet access should be made widely available and at low cost at formal educational institutions at the primary, secondary and tertiary levels;
- Standard Internet architecture and tool sets should be established for e-government websites; and
- Training for ministries in computer skills, English language, and management information systems should be rapidly expanded.

The ICT assessment team wishes to thank the USAID/Vietnam personnel for the opportunity to work with them during the course of this Assessment and for their support throughout the two weeks in country. In addition, the team wishes to thank those within the various government ministries, donor organizations, universities, NGOs and private sector firms who were so generous with their time and patience during the course of our conversations. We trust this combined effort will lead toward some meaningful ICT-related activities that will bring about substantive improvements within Vietnam.

It should be noted that due to the tragic events of 11 September 2001, this ICT Assessment is being undertaken in two stages. Only part of the team was able to be in Vietnam during September, and this report reflects the assessment resulting from these initial two weeks. A follow-up trip was carried out in November 2001. This follow-up activity will concentrate on key areas where additional detailed analysis is thought to be of value.

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## Abbreviations and Acronyms

ADB	Asian Development Bank
AFTA	ASEAN Free Trade Area
AmCham	American Chamber of Commerce
ANE	Asia Near East (regional bureau of USAID/Washington)
AP	Asia-Pacific
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations (Brunei, Philippines, Indonesia, Laos, Myanmar, Malaysia, Singapore, Thailand, and Cambodia)
ATM	Asynchronous Transport Mode
B2B	Business to Business (electronic commerce)
B2C	Business to Consumer (electronic commerce)
BCC	Business Cooperation Contract
BLS	Bureau of Labor Statistics (U.S. Department of Commerce)
BOO	Build-Operate-Own
BOT	Build-Operate-Transfer
BTA	Basic Telecommunications Agreement (WTO)
BTA	Bilateral Trade Agreement (U.S. – Vietnam)
BTO	Build-Transfer-Operate
CAGR	Compound Annual Growth Rate
CAP	Community Access Point
CCG	Country Commercial Guide (Dept of State/Embassy)
CEPT	Common Effective Preferential Tariff Scheme
CIC	Community Information Center
CMM	Capability Maturity Model (Software Engineering Institute)
CPV	Communist Part of Vietnam
CRS	Catholic Relief Services
DBMS	Data Base Management System
DGPT	Department General for Post and Telecommunications
DOC	U.S. Department of Commerce

DOSTE	Departments of Science, Technology, and the Environment
DPI	Direct Private Investment
“Doi Moi”	“renovation” policy of Vietnam in 1980s
DOT Force	Digital Opportunity Task Force
EDA	U.S. Department of Commerce’s Economic Development Administration
EDI	Electronic Data Interchange
EPZ	Export Processing Zone
FAS	Foreign Agricultural Service (U.S.)
FCS	Foreign Commercial Services (U.S.)
FIE	Foreign Invested Enterprise
FIL	Foreign Investment Law
FDI	Foreign Direct Investment
FPT	Local ISP
FPT	Corporation of Financing and Promoting Technology
FTDC	Foreign Trade and Investment Development Center
GATT	General Agreement on Tariffs and Trade
GCD	General Customs Department
GCOP	Government Committee for Organization and Personnel
GDP	Gross Domestic Product
GNP	Gross National Product
GOJ	Government of Japan
GPS	Global Positioning Systems
GSM	Global System for Mobile Communications
HCMC	Ho Chi Minh City
IAS	International Accounting Standards
ICT	Information and Communications Technologies
IED	Internet for Economic Development
IEEE	Institute for Electronics and Electrical Engineers
IESC	International Executive Service Corps
IFC	International Finance Corporation (WB)
ILO	International Labor Organization
IMI	International Market Insight (U.S. Dept of Commerce)

IMF	International Monetary Fund
IAP	Internet Access Provider
IPR	Intellectual Property Rights
ISDN	Integrated Services Digital Network
ISA	Industrial Sector Analysis (U.S. Dept of Commerce)
ISO	International Standards Organization (e.g., ISO 9000)
ISP	Internet Service Provider
IT	Information Technology
ITA	Information Technology Agreement (WTO)
ITAA	Information Technology Association of America
ITG	Information Technology Group at Center for International Development at Harvard University
ITU	International Telecommunications Union (UN)
IZ	Industrial Zone
JICA	Japan International Cooperation Agency
JV	Joint Venture
LAN	Local Area Network
Mbps	Mega bytes per second
MCI	Ministry of Culture and Information
MHz	Mega (million) Hertz (cycles/second)
MARD	Ministry of Agricultural and Rural Development
MPI	Ministry of Planning and Investment
MOET	Ministry of Education and Training
MOF	Ministry of Finance
MOSTE	Ministry of Science Technology and Environment
MOT	Ministry of Trade
MOTC	Ministry of Transportation and Communications
NTCA	National Telephone Cooperative Association
NetNam	Local ISP
NGO	Non-Government Organization
NTB	Non-trade Barriers
NTR	Normal Trade Relations
ODA	Official Development Assistance

OPIC	Overseas Private Investment Corporation
SaigonNet	Local ISP
SBV	State Bank of Vietnam
SME	Small and Medium Enterprise
SO	Strategic Objective (USAID)
SOE	State Owned Enterprise
SPC	Saigon Postel Corporation
SPT	Saigon Post and Telecommunications
SRV	Socialist Republic of Vietnam
TPCC	Trade Promotion Coordinating Committee
TRIPS	Trade Related Intellectual Property System (WTO)
UNCTAD	United Nations Commission on Trade and Development
UNICEF	United Nations Children's Fund
UNDP	United Nations Development Program
U.S.	United States
USAID	U.S. Agency for International Development
USDA	U.S. Department of Agriculture
USDOC	U.S. Department of Commerce
USG	U.S. Government
USTDA	U.S. Trade and Development Agency
VAGETS	Vietnamese Association for Computing, Engineering Technology, and Science
VASC	Value Added Service Company
VAT	Value Added Tax
VCCI	Vietnam Chamber of Commerce and Industry
VDC	Vietnam Datacommunications Company
VIETEL	Military Electronic and Telecommunications Company
VMTS	Vietnam Mobile Telecom Service
VNN	Local ISP
VNPT	VietNam Posts and Telecommunications Corporation
VoIP	Voice over Internet Protocol
VPSC	Vietnam Postal Service Company
VTI	Vietnam Telecom International Company

VTNC	Vietnam Telecom National Company (national trunk lines)
VVAF/VI	Vietnam Veterans of America Foundation or Veterans International
VSAT	Very Small Aperture Terminal
WB	World Bank
WFP	World Food Program
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WTO	World Trade Organization
WVI	World Vision International

# Vietnam: ICT Assessment

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## I. Background/Context

This ICT Assessment was undertaken at the request of USAID's Asia Near East (ANE) Bureau, in close coordination with those managing the Agency's development activities for Vietnam. As such, this work was a part of a much larger context. The following provides a summary of the background and context for this ICT Assessment. These include:

- Overview of Vietnam (political, social, and economic);
- USAID's ANE Bureau and Vietnam-specific development program;
- ANE Bureau Information and Communications Technology (ICT) Initiative; and
- Related ICT Surveys/Assessments

### Overview of Vietnam

The Socialist Republic of Vietnam (SRV) is located in Southeastern Asia, bordering the Gulf of Thailand, Gulf of Tonkin, and the South China Sea. Neighboring countries include China, Cambodia, and Laos. Its size is slightly larger than the state of New Mexico, U.S. The population of Vietnam is slightly under 80 million with a 1999 Gross Domestic Product of US\$ 28.6 billion. This places the per capital GDP of those living in Vietnam at US\$ 395.<sup>2</sup> On a Purchasing Power Parity (PPP) basis, the GDP for 1998 was placed at US\$ 134.8 billion with a per capita GDP (again, on a PPP basis) placed at an estimated US\$ 1,770.<sup>3</sup>

Politically, the Socialist Republic of Vietnam is a communist state though its adherence to ideological orthodoxy has become less important than economic development as a national priority.<sup>4</sup> It gained its independence from France on 2 September 1945; reunified the country after the American War in 1975; and put into place a new Constitution on 15 April 1992. The government of Vietnam consists of an Executive Branch (headed by the President) with 31 ministries and commissions; a Legislative Branch (an unicameral National Assembly with 450 seats); and a Judicial Branch (Supreme People's Court). There is only one political party in Vietnam, the Communist Party of Vietnam (CPV), which guides national policy development and implementation. There are 61 administrative provinces within Vietnam. The SRV is members to a growing number of regional and international organizations including APEC, ASEAN, IBRD, IDA, IFC, IMF, Intelsat, ITU, a number of UN organizations, and WIPO, among many others. Vietnam established normalized diplomatic relationship with the U.S. on 11 July 1995, with the U.S. upgrading its Liaison Offices to Embassy status in August of 1995. While the SRV has made great strides in moving to an export-oriented market, reducing government corruption and streamlining cumbersome bureaucracies have been slow to reform.

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<sup>2</sup> U.S. Department of State FY 2001 Country Commercial Guide: Vietnam (July 2000).

<sup>3</sup> [http://www.photius.com/wfb/wfb1999/vietnam/vietnam\\_economy.html](http://www.photius.com/wfb/wfb1999/vietnam/vietnam_economy.html)

<sup>4</sup> U.S. Department of State Background Notes: Vietnam (August 1999)  
[http://www.state.gov/www/background\\_notes/vietnam\\_899\\_bgn.html](http://www.state.gov/www/background_notes/vietnam_899_bgn.html)

Vietnam's population approaches 80 million, with ethnic Vietnamese constituting nearly 90 percent of the total population. It has achieved an impressive literacy rate of 88 percent with only slightly lower literacy levels for women than that of men, and a life expectancy of 63.08 years.<sup>5</sup> Vietnam's population is relatively young, with half of Vietnam's population under 25 years old and only 5 percent over 65 years old (1999 estimates).<sup>6</sup> Approximately 70 percent of the workforce is engaged in agricultural activities. While in the past the labor pool within Vietnam has been inexpensive, this is no longer the situation with current shortages of highly skilled workers.

The Economy of Vietnam experienced significant economic growth in the mid-1990s and was lauded as the "next Asian tiger." This growth was due in large part to a "doi moi" (renovation) policy undertaken by the government in 1986 to promote market reforms. This led to large inflows of foreign direct investment (FDI) and official development assistance (ODA). Economic growth between 1990 and 1997 averaged 8 percent per year, which slowed substantially to 4.4 percent for 1999 and 4.8 percent for 2000.<sup>7</sup> A somewhat fragile recovery of Vietnam's economy is currently underway, with 7 percent growth predicted for 2002 (according to the Asian Development Outlook). This is due in part to robust exports (23 percent over the prior year), which included growth in electronics and computers and foreign investment-led growth in industrial performance. Services and industry are the fastest growing economic sectors. Inflation remain low for the past several years.

<b>GDP – Composition by Sector (2000)</b>	
• <b>Agriculture</b>	<b>24.3 percent</b>
• <b>Services</b>	<b>39.1 percent</b>
• <b>Industry &amp; Constr</b>	<b>36.6 percent</b>

In 1994 the U.S. lifted the remaining elements of its trade embargo with Vietnam—a precursor to establishing normal political relations a year later. American companies have increasingly become engaged in Vietnam in recent years with the U.S. now being the 8<sup>th</sup> largest investor. There are an estimated 400 American registered firms in Vietnam. A Bilateral Trade Agreement (BTA) was signed between the U.S. and Vietnam in July of 2000 and was recently ratified by the U.S. House of Representatives and U.S. Senate. This BTA grants Normal Trade Relations (NTR) status, which will reduce bureaucratic red tape, lower tariffs, and strengthen protection of Intellectual Property Rights (IPR). The SRV is just now initiating the accession process for entry into the World Trade Organization (WTO).

### **USAID's ANE Bureau and Vietnam-specific Development Program**

Asia and the Middle East are strategically and economically important to the U.S. Over 50% of U.S. foreign trade and investment take place in the ANE region. ANE countries keep the world moving by supplying 50 percent of the oil to the U.S. and its Asian partners, and control crucial shipping lanes essential for international commerce. Instability in the region threatens U.S. national interests in stemming the proliferation of weapons of mass destruction, combating terrorism, and ensuring access for American business to commercial opportunities. USAID's development programs serve foreign policy objectives within Asia and the Middle East,

<sup>5</sup> ibid

<sup>6</sup> [http://www.photius.com/wfb/wfb1999/vietnam/vietnam\\_people.html](http://www.photius.com/wfb/wfb1999/vietnam/vietnam_people.html)

<sup>7</sup> <http://www.adb.org/Documents/News/2001/nr2001041.asp>

particularly the promotion of international peace and prosperity, while simultaneously addressing the region's humanitarian needs.

USAID programs in the *ANE region* further all three national security core objectives:

- Enhance American security,
- Bolster America's economic prosperity, and
- Promote democratic governments and open societies<sup>8</sup>

With regards specifically to *Vietnam*, USAID's program for FY2001 focus specifically in two areas:

- Enhancing the environment for trade and investment, and
- Improving access to services for vulnerable groups

USAID-funded technical experts will work with the Government of Vietnam (GVN) to build understanding among Vietnamese stakeholders in the public and private sectors on the necessary steps to liberalize the trade and investment framework and to assist in implementing the market reforms required under such a framework. USAID-funded assistance has already assisted in development of the companies law (enacted in late 1998) that has helped level the playing field for the private sector, and through provision of expert technical assistance helped accelerate negotiations for the U.S.-Vietnam bilateral trade agreement, which reached agreement-in-principal in 1999. In FY 2001, USAID will continue to assist the GVN in implementing the free-market reforms required under the bilateral trade agreement, and to assist Vietnam in ascending to membership of the World Trade Organization (WTO).

Through the Accelerating Economic Recovery in Asia program, USAID will assist Vietnam in developing structural reforms needed for trade and investment such as financial sector reform, economic governance (accountability and transparency), and regional competitiveness. USAID's United States-Asia Environmental Partnership portfolio of activities, such as trade fairs, will continue to accelerate transfer of U. S. environmental technology designed to meet specific needs in Vietnam.

While accelerating economic liberalization and growth are key to Vietnam's future, it is important that the disadvantaged do not get left behind. USAID will continue to improve access to services for selected vulnerable groups including: victims of the annual floods; victims of injuries from the war or from land mines; orphans and displaced children; and those that are at high risk of contracting HIV/AIDS.

- **Summary—Enhanced Environment for Trade and Investment (440-006)**—It is widely recognized that if Vietnam is to achieve sustainable growth domestically and compete internationally, it will need to move from a controlled, centrally planned economy to one that permits freer and broader participation of the private sector. As part of this process it will need to develop and implement a wide range of reforms that will

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<sup>8</sup> Asia and the Near East Overview – (text taken from the FY2001 Budget Justification).  
<http://www.usaid.gov/pubs/bj2001/ane/index.html>

permit greater participation in the world economy. USAID has experience and a comparative advantage in providing technical assistance that may help Vietnam understand, develop, and implement trade reforms, including tariff and customs reforms, removal of non-tariff barriers, investment licensing and registration, intellectual property rights, market access, procurement reform, removal of anti-competitive policies, and improved accountability and transparency. This strategic objective enables USAID to respond as opportunities and openings with the GVN arise. This objective is consistent with MPP goals to open Vietnam's markets to free the flow of goods, services, and capital; and to promote broad-based growth in Vietnam's developing and transitional economy. With the development of a long-term strategy for Vietnam's economic development in mind, the program will contribute to the attainment of transparency, due process, accountability and market-based principles for Vietnam. To date, USAID has responded to opportunities in trade and investment policy and in developing a companies law.

- **Summary—Improved Access to Services for Selected Vulnerable Groups (440-007)**—While accelerating economic liberalization and growth are key to Vietnam's future, it is important that the disadvantaged do not get left behind. Under this Strategic Objective, USAID provides support to selected vulnerable groups with a view to improve opportunities for them to lead more productive lives. These groups include: victims of the annual floods; victims of injuries from the war or the mines; orphans and displaced children; and those that are at high risk of contracting HIV/AIDS.

Through this strategic objective, USAID is able to provide assistance utilizing resources from the Leahy War Victims Fund (LWVF), the Displaced Children and Orphans Fund (DOCF), the Asia Regional HIV/AIDS program, and resources from the Office of Foreign Disaster Assistance (OFDA). This objective is consistent with MPP goals to prevent or minimize human costs of conflict and natural disasters in the region, and to enhance the health status of the Vietnamese people through programmatic and policy support.<sup>9</sup>

### **ANE Bureau ICT Initiative**

During the past several years USAID has increased its focus on leveraging Information and Communications Technologies (ICTs) within its development activities. ICT-focused initiatives undertaken by USAID have included the Leland Initiative, the Internet for Economic Development (IED) Initiative, AfricaLink, etc. In addition, a number of USAID Missions, with the support of their regional bureaus, are actively examining their country and development portfolios from an ICT perspective.

USAID's focus on placing increased attention on leveraging ICTs for international development was reinforced at the G-8 Summit that took place in July 2000 at Okinawa, Japan. While the Summit addressed several issues, the issue of the growing "digital divide" resulted in the development of the Okinawa Charter on Global Information Society. The Charter launched a

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<sup>9</sup> USAID's Vietnam FY2001 Program Description and Activity Data Sheets-Vietnam Overview  
<http://www>.

Digital Opportunity Task Force (DOT Force) as a first step toward the goal of achieving digital access and education for all by the year 2010. A brief summary of the Charter and the global call to action is reflected as Appendix A.

In large part this increased global focus is predicated on the growing awareness of the impact that ICTs have had on the U.S. economy over this past decade. This impact has been captured and documented in a series of annual reports prepared by the U.S. Department of Commerce, most recently in its June 2000 report, “Digital Economy 2000.” A brief summary of this report is reflected as Appendix B.

This ICT Assessment for Vietnam has been undertaken in support of USAID’s Asia and Near East (ANE) Bureau’s recently updated Strategic Framework and Objectives. A copy of this recently-upgraded document is reflected as Appendix C.

As reflected in the ANE Bureau’s strategic framework and objectives, these were developed as part of the Bureau’s Economic Growth Strategic Objective (SO) 498-023 – Encourage Economic Growth. The **principle objective** of the ICT initiative is stated as follows:

*“To foster increased growth and development in ANE countries by strengthening the enabling environment for ICT development and application. This can be achieved by promoting progressive ICT policies and encouraging private sector growth and development applications.”*

In supporting this principle objective, and the stated economic growth SO (498-023), a new **Intermediate Result (IR)** has been developed:

*“IR 23.4: Expand ICT Development through Cross-Border Cooperation on Policy Strengthening and Private Sector Development”*

In support of this new IR, there are three areas of : a) policy development, b) private sector development, and c) people and application activities. These are further described as sub-IRs as follows:

**23.4.1 – Improved Policies, Laws and Regulations Modified**—*The government’s primary role in terms of fostering ICT development in its country is to create a legal and regulatory environment that encourages private investment. It should promote policy reform to permit the introduction and growth of information and communication technologies, reducing barriers to open connectivity, and ensuring that global electronic commerce can take place in an open and transparent fashion.*

**23.4.2 – Enhanced Capabilities of the Private Sector**—Supporting the development of a strong private sector in the region will ensure economic growth activities, and can be the base for helping spread ICT application. Further, private sector development can best be accomplished by developing alliances with other ICT players, particularly the US ICT private sector. These linkages provide three types of benefits:

1. They provide “learn by doing” opportunities for local firms, which have an opportunity to work directly with more advanced colleagues;
2. They provide an opportunity for the US ICT sector to expand into new markets;
3. They provide USAID with leverage, as it can partner with US ICT players, and further its development assistance.

**23.4.3 – People & Application Activities**—In addition to specific ICT sector development activities, the Bureau has an opportunity to support the development of ICTs as a platform for development. In other words, ANE can help develop cross SO activities that use the Internet (and other ICTs) to deliver better, wider, and/or more relevant services to the Agencies targeted constituencies. For instance, the Africa Bureau has *AfricaLink*, a USAID initiative to facilitate access to the Internet for its colleagues and partners in Africa in the agricultural, environmental, and natural resource management sectors. This program has used the Internet to greatly enhance service delivery.

### **Related ICT Surveys/Assessments**

With the increased international focus on ICTs in recent years, a growing number of ICT survey and assessment tools have been developed to measure “E-Readiness,” that is, the capacity of nations to participate in the digital economy. E-Readiness is understood to be the source of national economic growth in the networked century and the prerequisite for successful e-business. The various approaches undertaken by different organizations are best documented by Bridges.org, a non-profit organization, and include five.<sup>10</sup> such ICT-related surveys for Vietnam. All five of these are “statistically or questionnaire-based,” whereas this ICT Assessment undertaken for USAID is the only “case study” assessment undertaken for Vietnam. These five surveys are as follows:

- CIDIF – Centre International pour le Development de l’Inforoute en Francais<sup>11</sup>
- EIU – The Economist Intelligence Unit (E-Business Readiness)<sup>12</sup>
- KAM – World Bank, Knowledge Assessment Matrix<sup>13</sup>
- MI – McConnell International and the World Information Technology Services Assistance (WITSA)<sup>14</sup>

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<sup>10</sup> <http://www.bridges.org>

<sup>11</sup> <http://www.cidif.org/diffusion>

<sup>12</sup> <http://www.ebusinessforum.com>

<sup>13</sup> <http://www1.worldbank.org/gdln/kam.htm>

<sup>14</sup> <http://www.mcconnellinternational.com>

- MQ – The Mosaic Group<sup>15</sup>

Several of these underscore Vietnam's ranking as one of the lowest in the region and the least equipped to prosper in the networked economy. This is further reflected by a preliminary analysis using the Networked Readiness Guide developed by the Information Technology Group (ITG) at the Center for International Development (CID) at Harvard University<sup>16</sup>. Appendix F contains a more detailed review of these survey tools as they apply to Vietnam, including the preliminary assessment using the Harvard guide.

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<sup>15</sup> <http://www.som.csudh.edu/fac/lpress/gdiff/>

<sup>16</sup> <http://www.readinessguide.org>

The Policy Development component included in this ICT assessment addresses ANE's sub-IR 23.4.1, titled; "Improved Policies, Laws, and Regulations Modified." This is described as follows:

### ***23.4.1 – Improved Policies, Laws and Regulations Modified***

*The government's primary role in terms of fostering ICT development in its country is to create a legal and regulatory environment that encourages private investment. It should promote policy reform to permit the introduction and growth of information and communication technologies, reducing barriers to open connectivity, and ensuring that global electronic commerce can take place in an open and transparent fashion.*

*Illustrative projects could include:*

- *Improving the legal framework for ICT development, promulgating Internet laws and intellectual property regulation, and strengthening of those institutions that will support the development and implementation of those laws.*
- *Reducing Internet tariffs regionally, to more closely aligned with cost-based accounting.*
- *Strengthening telecommunications regulation and enforcement, using the World Trade Organization's Basic Telecommunications Agreement.*

### **Summary/Analysis**

In recent years the government of the SRV has established information and communications technologies (ICTs) as a national priority. This priority has resulted in establishing national targets for growing the sector, expanding use, developing human resource capacity, expanding telecommunications access, etc. In 1995 an IT Master Plan for 1996-2000 was developed with more specific targets and plans for action to ensure this priority becomes reality. While there is some admission that the actual achievements were less than what had been planned, new series of more integrated IT Master Plans for 2001-2005 are currently being readied for signature that continue the priority, commit resources towards moving forward, and outline specific plans for action in key areas. At present the Ministry of Science, Technology, and Environment (MOSTE) has lead for ensuring the various IT Master Plans are complementary, integrated, and sufficient to fulfill the established goals. In addition, discussions are underway within the government to explore the viability for establishing a since ICT-focused Ministry for guiding this national commitment. Clearly the SRV, including both the public and private sectors, view ICTs as a strategic component to its economic growth, and have been working to translate their vision into reality for several years, with even added focus currently taking place.

In the area of telecommunications, at present there is no Telecommunications Law in place, though one is currently in draft. Plans are to move this to the Prime Minister's office for review and signature by the end of this calendar year (2001). In the interim, policy, regulation,

rules, and direction is established a framework based on commercial regulations and decrees, decisions, circulars, and official letters issued by the government, the Prime Minister or the DGPT. The Department General for Post and Telecommunications (DGPT) is the primary government policy/regulatory organization, and while separate from operational responsibility, it is not as independent as many would feel needed. This is especially the current situation in Vietnam where all provisioning of telecommunications is via a series of government operators. There are some beginnings evident with regards to opening up the telecommunications sector for more private sector participation, however at present the only allowable role is via Business Cooperative Contracts (BCCs) where private domestic and foreign investors provide investment capital (most frequently in the form of providing technology), and then receive a negotiated

#### **Findings: Policy Development**

- ICTs given high priority by government of Vietnam
- Recent establishment of IT-focused steering committee with participation across key ministries, plus potential for new ICT Ministry to be established in the future
- Directive 58-CT/TW sets national priority for role of ICTs in public and private sectors, and sets targets for growing and applying ICTs in public and private sectors
- Resolution 07/2000/NQ-CP and Decision 128/2000/QD-TTg places even more emphasis on growing SW industry within Vietnam with investment and tax incentives
- Decision 112/2001/QD-TTg provides direction for computerizing administrative systems within the government
- IT Master Plan for 2001-2005 being finalized by MOSTE for signature by PM
- Other ICT Master Plans being developed at Ministry and Provincial levels to support specific areas of ICTs (e.g. E-commerce, E-Government, growth of sector, etc.)
- DGPT responsible for shaping telecommunications sector, though still closely linked with VNPT
- Currently no Telecommunications Law, but a Telecom Act is in draft stage and to be submitted for approval by end of the year
- Trend toward more open telecom environment (with support in BTA & WTO), but move in this direction is very cautious and with significant limitations on the role private sector can have in telecommunications sector (Government has monopoly via VNPT, Saigon Postel & Vietel)
- Decree 55/2001/ND-CP provides some expanded opportunities for private sector engagement in the Internet arena
- Virtually no E-commerce-related legal structure in place, though MOT has draft Master Plan for E-commerce for 2001-2005 period
- IPR on the books but not enforced

return on their investment for a prescribed number of years.

Market liberalization appears to be taking place at what might be characterized at a very cautious pace, and not what can be considered "free market." Rather, the government continues to hold tight to virtually all aspects of telecommunications. In recent years the DGPT has expanded the number of licenses for telecommunications services in Vietnam, including licenses that all allow new entrants to provide a broad range of services, including most recently, domestic and international long distance Voice of IP (VoIP) services. However, all of these

licenses are to government organizations (some of which do have BCCs with foreign companies to obtain needed investment capital). In addition, the government holds all international linkages, and this includes the operations of a single national Internet Access Point (IAP). In a recent Decree (55/2001/ND-CP dated 23 August 2001) this was relabeled Internet Exchange Point (IXP), with a second IXP license authorized in the future (no doubt to one of the current government telecommunications providers). At present the single IXP operates a national Firewall, which serves to block key Internet services and filters traffic found to be offensive or politically undesirable. This blockage eliminates the use of more advanced Internet services with specific implications in limited E-Commerce/E-Business types of applications (even Lotus Notes replication will not work within Vietnam). There is a movement to allow bypass of these restriction for targeted High Tech and Software Parks being put in place. Another form of liberalization currently underway is the near-term licensing of private sector ownership of ISPs. Again, at present the five ISPs operating in the SRV are all State Owned Enterprises (SOEs).

This cautious move towards liberalization of the telecommunications should accelerate in the next few years. Hopefully the new Telecommunications Act being drafted will reflect a more liberalized environment. In addition, the U.S.-Vietnam Bilateral Trade Agreement (BTA) contains provisions for staged liberalizing of this sector over the next several years. Further, with Vietnam's desire to eventually gain access to the WTO, this too will put pressure on liberalizing the sector. The reality is, if Vietnam does not act in a more aggressive manner, there is a high probability that their national goals of creating a vibrant high tech, and especially a much-enlarged software sector, will simply not be reached. These are largely "weightless economy" sectors that need a high-speed digital highway to be successful. The current restrictions and high costs resulting from current policies prevent this from being part of the local business environment, even through the basic infrastructure is in place or there are plans for expanding it to provide the needed capacity. Similar restrictions are in place regarding domestic content, a much needed component, but again with government restrictions on licensing and more recently, what appears to be high costs.

Regarding a needed legal structure to support electronic commerce, in short, it simply doesn't exist within Vietnam. For the most part there is very limited use of credit cards within Vietnam and this for the most part is limited to the ExPat community and the tourism sector. This certainly places the potential of near-term B2C E-commerce as minimal. However, there are also limitations in B2B E-commerce in that some requisite services are blocked by the national Firewall. In addition, at present there is virtually no E-commerce/E-business enabling infrastructure in place. This is the focus of the Department of Trade's IT Master Plan for 2001-2005, however much work needs to be done over the next several years. Implementation of solutions in this area will need to be tightly coordinated with the e-ASEAN initiative aimed at providing regional harmonization in establishing a common E-commerce framework for the region.

One element that relates to E-commerce, but in fact also stands on its own is Intellectual Property Rights (IPR). Here the SRV has signed on to key international agreements, and has legal requirements on their books. However, there is virtually no enforcement within Vietnam. Current estimates are that 99 percent of the software within Vietnam is illegally copied. Whereas currently most harm is being done to U.S. such as Microsoft, Oracle, and IBM, local

software development houses are also adversely impacted. With the target goal of the government to grow the local software sector to US\$ 500 million by 2005, this goal is simply unachievable if this current situation is allowed to exist and aggressive action toward improved enforcement is not put in place.

### **Business and Investment Environment**

While not the focus of this Assessment, in summary the business and investment environment within Vietnam is quite promising. For a more comprehensive discussion on this topic the reader is encouraged to obtain a copy of the July 2001 issue of the Vietnam Country Commercial Guide 2002.<sup>17</sup> In addition to the socio-economic situation that exists in Vietnam, two recent laws are having a significant impact in creating these enabling conditions. First there is the Enterprise Law that has allowed for easier registration of new companies and during 2000, helped generate 14,000 new private SMEs. This has also lead to increased domestic investment. Second, is the relatively open environment for foreign investment. Whereas in the past there were limitations on the percent ownership, these have recently been relaxed considerable such that now it is possible for a foreign firm or individual to wholly own a private sector business within Vietnam. This too has lead to increased FDI in recent years. Coupled with the relatively large population (13<sup>th</sup> most populated country in the world), the high human resource/workforce potential, and the likely ratification of the U.S.-Vietnam BTA, clearly Vietnam has, and continues to become an attractive business environment for the U.S. as well as other countries.

### **MOSTE's IT Master Plan for 2001 - 2005**

The IT Master Plan for 2001 – 2005, currently being drafted under the direction of the Ministry of Science, Technology, and Environment (MOSTE)<sup>18</sup> builds off of a previous plan covering the years 1996-2000.<sup>19</sup> Achievements during this period included introducing IT management systems in the banking, financial, customs, and tourism sectors; training an estimated 20,000 IT professionals at national universities; and building a local IT industry which today boasts the local assembly of about 70 percent of personal computers sold in Vietnam. The Internet was also introduced during this period in 1997, with growth in Internet accounts numbering about 170,000 today (0.2 percent penetration) with the number of Internet users likely approaching 600,000.

The MOSTE Plan recognizes that progress is needed in several key areas—the low penetration of Internet use, the need for more and higher quality of trained IT professionals, and a more liberal legal and regulatory environment for IT. The new IT Master Plan for 2001-2005 provides guidance for ministries and provincial level peoples' committees to develop action plans within their respective domains to support seven key areas:

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<sup>17</sup> <http://www.usatrade.gov> or <http://www.tradeinfor.doc.gov>

<sup>18</sup> Master Plan on Information Technology Development in Vietnam in the period 2001-2005, Ministry of Science, Technology and Environment, Draft Versions #7 and #8, October 2001. It is expected that a final draft (version #9) with ministry-wide comments and input will be signed by the Prime Minister and submitted to the National Assembly in November 2001.

<sup>19</sup> Government Resolution 49-CP/1993 and Master Plan for IT Development to 2000.

- **IT Usage and Application**—use of ICTs to support the economic sector (banking, customs, and taxation); business development, especially small and medium enterprises (SMEs); agriculture; e-government with focus on service delivery for citizens; and linkages with the E-ASEAN initiative;
- **Human Resource Development**—building a professional IT workforce in Vietnam of 50,000 (from the current estimate of 20,000); improving the quality of this workforce; improving IT facilities in the universities, and providing Internet to all schools (i.e., all universities by 2003 and 75 percent of upper secondary schools by 2005);
- **Telecommunications/Internet**—introducing more competition in the local environment: i.e., more ISPs and IXPs; expanded infrastructure into the rural areas; and lowering of costs for Internet with a view to reaching or exceeding access standards within the region;
- **IT Industry**—building a private software sector in Vietnam, with a strong emphasis on the export market. There is also a focus on improving local content, and improving the percentage and quality of locally-assembled PCs (target is 90 percent) with some attention also being placed on information appliances (e.g., personal digital assistants);
- **Research and Development**—establishing a close link between the market, research and education, including a special orientation toward a Vietnamese-machine interface such as voice recognition;
- **Legal and Regulatory**—building an institutional environment and legal framework, specifically for e-commerce, to support bilateral, regional and international trade agreements (e.g., ASEAN, AFTA, the US-Vietnam BTA, and the World Trade Organization’s Information Technology Agreement). Efforts to improve the investment environment will target measures to protect and enforce Intellectual Property Rights (IPR) in the court system; and
- **Raising Awareness**—bring about more government and public awareness of the value-added of ICTs in promoting social and economic development.

While many of the implementing details are yet to be developed, and implementation may well lag behind the stated directions, this IT Master Plan is an excellent document and charts a solid course in the right direction. In large part it is predicated on Politburo’s Directive No. 58-CT/TW of 17 October 2000, titled: On Accelerating the Use and Development of Information Technology for the Cause of Industrialization, Modernization.

At present MOSTE is assigned as the Coordinating Agency for this Master Plan, however it is also understood that there is some discussions taking place with regards to establishing a new IT management organizations/agency at some level within the government of Vietnam.

## Telecommunications Policy Environment

The Government of Vietnam has made the development of the Information Technology (IT) sector one of its highest economic priorities for the coming decade. While there is no one law specifically on telecommunications, the current regulatory framework is based around commercial regulations and decrees, in particular those that refer to the rules regarding foreign investment. The primary regulatory agency is the Department General of Posts and Telecommunications (DGPT), which has the following responsibilities, with some constraints placed on DGPT by the Ministry of Planning and Industry (MPI) and Vietnam Post and Telecommunications (VNPT) itself (e.g., the government-owned telecom monopoly):

- Establishing laws, policies and strategies for activities in postal, telecommunications and radio frequency management;
- Issuing standards and regulations regarding networks, services, equipment, RF management and regulating the tariffs and fees for all services;
- Granting licenses for the operation and making announcements of the opening and closing of national and international services; and
- Inspecting and giving guidance in all telecommunications and RF issues in regard to Vietnamese law.

The year 2000 was a watershed year for IT development in Vietnam in terms of government policy and regulatory reforms. A regional strategy has been formulated through ASEAN for harmonizing ICT development in the region.<sup>20</sup> This includes provisions on connectivity and regional content development, a seamless legal and regulatory environment, a common marketplace for ICT products and services, human resources development, and e-governance. A national strategy has been articulated by the Communist Party's Politburo in policy directive #58<sup>21</sup> that pushes IT toward the forefront of the country's industrialization drive for the period 2000-2005. Building on this policy directive, a steering committee was established under the Ministry of Science, Technology and the Environment (MOSTE), and new targets were announced to bring the IT sector up to regional standards in the next ten years.<sup>22</sup> The implementation of the government's IT sector goals involves four principal program areas with specific targets by 2005:

- To upgrade telecommunications and internet infrastructure through VNPT and expand Internet coverage to 1.5 percent of the population;
- To train 50,000 IT professionals at university level;
- Provide internet access for all universities, 70 percent of middle schools, 60 percent of hospitals, 70 percent of enterprises, and 50 percent of villages;
- To develop the software industry for domestic and overseas markets with expected annual revenue of USD 500 million (60% export); and

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<sup>20</sup>E-ASEAN Framework Agreement on ICT Products and Services, April 2000

<sup>21</sup>Politburo's Policy Directive No. 58-CT/TW of 17 October 2000, titled: On Accelerating the Use and Development of Information Technology for the Cause of Industrialization, Modernization.

<sup>22</sup> Prime Minister Decision #81/2001/QD-TT on IT Promotion for Industrialization and Modernization.

- To promote domestic hardware industry, including the assembly and production of high quality IT equipment for domestic and overseas markets, with expected annual revenue of USD 300 million.

Numerous government ministries and provincial level peoples committees have subsequently been developing and introducing resolutions and action plans for IT development. For example, the Ministry of Trade recently announced an IT Master Plan for E-Commerce to develop favorable conditions so that a majority of businesses will be involved in e-commerce by 2005. The Steering Committee coordinated by MOSTE has taken the lead in ensuring the various IT Master Plans are complementary, integrated, and sufficient to fulfill the established goals. In addition, discussions are underway within the government to explore the viability of establishing an ICT-focused Ministry for guiding this national commitment. Currently, while telecommunications is guided by the Department General for Post and Telecommunications, the Ministry of Science and Technology oversees software development; and the hardware industry is supported by the Ministry of Industry.

The most recent effort to liberalize telecommunications in Vietnam came in the form of Decree No. 55/2001/ND-CP dated 23 August 2001, titled: On the Management, Provision, and Use of Internet Services. This was brought about by DGPT. In very brief summary, the new Decree opens up the Internet environment in Vietnam such that some level of Internet services will be opened to the private sector. For example, whereas currently the only Internet Access Point (IAP)/Internet Exchange Point (IXP) is via VNPT's ITA, in the future a second IXP will be allowed. Also, whereas at present all 5 Internet Service Providers (ISPs) operating in Vietnam are state-owned, in the future, private investment will be allowed to set up private ISPs as entirely privately-owned companies (goal of 10 by the end of this year). In addition, Decree 55 establishes and authorizes other value-added services such as Online Service Providers (OSPs), and Internet Content Providers (ICPs). The Decree establishes the parameters and guidelines for opening up and the operations of such services, including the necessity for Cyber Cafés to establish contracts with the ISP from which they obtain their services.

### **E-Commerce/E-Business Environment**

While there are a few e-commerce early adopters in Vietnam, for the most part, Vietnam simply has not put into place a legal and regulatory environment to support e-commerce/e-business. In November of 1999 the Ministry of Trade (MOT) announced an inter-agency project to assess technologies and propose policies to allow Vietnam to develop e-commerce.<sup>23</sup> There does appear to have been some progress on several topics, however as yet they have not resulted in a comprehensive framework being established in Vietnam. This is a topic that receives priority attention in the draft IT Master Plan for 2001-2005, as it is part of the IT use and application focus. Specifically this is linked directly with support for Vietnam's Small and Medium-sized Enterprises (SMEs), and is also linked tightly with the e-ASEAN Task Force initiatives as it must be linked with similar regional initiatives in order to gain needed normalization with neighboring trading partners. The MOT is in the process of developing an IT Master Plan

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<sup>23</sup> U.S. Department of State Vietnam Country Commercial Guide (July 2001).

for E-Commerce. In one draft outline reviewed, a project was identified as “Organizing and Developing E-Commerce,” again showing this as a national priority.

While broader than e-commerce/e-business, the issue of protecting Intellectual Property Rights (IPR), frequently gets discussed within this context. Vietnam is a member of the World Intellectual Property Organization (WIPO) and is a signatory to the Paris Convention for Industrial Property. It has also acceded to the Patent Cooperation treaty and the Madrid Agreement. It has not yet joined the Bern Convention. Vietnam is working on protection of IPR consistent with WTO’s Trade Related Intellectual Property System (TRIPS) Agreement. In addition, in June of 1997, Vietnam and the U.S. signed a Bilateral Copyright Agreement to establish a legal framework to protect Vietnamese and US. Copyright holders (formally implemented in December 1998). The Ministry of Culture and Information (MCI) is the responsible ministry.<sup>24</sup> The new U.S.-Vietnam Bilateral Trade Agreement (BTA) also has provisions addressing the IPR issue.

While on paper this is all well and good, in fact the issue of copyright violation, specifically for software, is endemic. It is estimated that perhaps in excess of 99 percent of the software in use within Vietnam is illegally copied software. Considering there is a priority by the government of Vietnam to develop an IT software sector for domestic and international markets, unless this issue is resolved, it simply will not take place in any significant way as the individual’s and company’s efforts cannot be protected from theft.

### **Donor Activities**

In the ICT policy arena, the only identified donor or Multilateral Development Bank (MDB) providing Official Development Assistance (ODA) was a multi-year project supported by the Canada International Development Agency (CIDA). This project provided technical assistance in support of the IT policy arena. It has recently concluded and it is unclear if there are any plans to continue with additional follow-up support. While other donors such as the Asia Development Bank (ADB), the United Nations Development Program (UNDP), and the World Bank (WB) are all present in Vietnam, none of them have active programs addressing the policy arena for ICTs.

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<sup>24</sup> U.S. Department of State FY 2001 Country Commercial Guide: Vietnam (July 2000).

# Vietnam: ICT Assessment

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## III. Private Sector Development

The Private Sector Development component included in this ICT assessment addresses ANE's sub-IR 23.4.2, titled; "Enhanced Capabilities of the Private Sector." This is described as follows:

### ***23.4.2 – Enhanced Capabilities of the Private Sector***

*Supporting the development of a strong private sector in the region will ensure economic growth activities, and can be the base for helping spread ICT application. Further, private sector development can best be accomplished by developing alliances with other ICT players, particularly the US ICT private sector. These linkages provide three types of benefits:*

- *They provide "learn by doing" opportunities for local firms, which have an opportunity to work directly with more advanced colleagues;*
- *They provide an opportunity for the US ICT sector to expand into new markets;*
- *They provide USAID with leverage, as it can partner with US ICT players, and further its development assistance.*

*Illustrative projects could include:*

- *Developing high-technology parks.*
- *Supporting a regional export promotion program for software developers.*
- *Promoting Workforce Development activities focused on ICT cluster development, including linking educational activities to private sector demands including equal opportunities for both genders.*
- *Increasing competition in the Internet Service Provider industry, to improve the range of services offered.*

### **Summary/Analysis**

The telecommunications situation in Vietnam is characterized by: 1) rapid growth in teledensity in recent years, 2) a government monopoly carried out by several government-owned telecommunications providers, 3) slow and conservative movements toward market liberalization, and 4) high costs and poor quality Internet services. Looking at the broader ICT picture in Vietnam there is significant dynamics taking place that are most promising. Approximately 70-75 percent of the PCs being sold in Vietnam are locally assembled. There is also an increasingly-dynamic software sector starting to take root in Vietnam that is being supported by the government's commitment to the sector in the form of setting up software parks and creating targeted tax incentives. This growth is for both domestic and international markets.

The telecommunications sector is dominated by the Vietnam Postal and Telecommunications (VNPT). VNPT is basically a government consortium of State Owned Enterprises SOEs), each providing specialized services such as international services, domestic local and long distance services, R&D, training, manufacturing, cellular, paging, and Internet services (including IXP and ISP) services. During the course of undertaking this assessment, VNPT was nearing a milestone of having 4.0 million customers for their land line services (this is compared to ITU data for 1999 of 2.1 million). This alone places Vietnam with a teledensity of 5:100. In recent months Voice over IP (VoIP) has been introduced for both domestic and international long-distance—lowering the cost by approximately 50 percent.

While VNPT dominates, there are several other telecom operators in Vietnam (though again all government owned and operated), with a new license just granted to the electric company allowing them to provide a full complement of services. These are also very dynamic with several focusing on growing the cellular market throughout Vietnam.

As would be expected, this growth tends to concentrate in urban centers rather than rural. This is clearly an issue for Vietnam as an estimated 80 percent of the population live in

#### Findings: Private Sector Development

- Rapidly expanding telecommunications infrastructure in recent years
- Teledensity of approximately 5:100 (approximately 4 million landlines)
- Private sector engagement in telecom is currently limited to BCCs
- FDI providing required capital and technology via BCCs (Saigon Postel & SK Telecom being the latest example for introducing CDMA-based Mobile services)
- Estimated 150,000 – 180,000 Internet accounts in Vietnam (0.02%; goal is 1.5% by 2005)
- Internet pricing is priced extremely high relative to other countries and the speeds are poor (e.g., you pay more and get less), with quality poor due in part to national firewall and restricted capacity
- Estimated 800,000 – 1,000,000 PCs in Vietnam (approximately 70% are assembled in VN) and increasing at about 20% a year
- Domestic IT demand for 2000 (hardware, software, and services) placed at US\$240 million in 2000, with hardware 80%, software 8% and services 12%
- Approximately US\$ 50 million in software sales in 2000; goal is US\$ 500 million by 2005
- Approximately 300 IT companies operating in Vietnam with 50 engaged in software production and 100 in providing software services (local firms have approximately 35 % of local market; goal is 60% by 2005)
- Approx: 20,000 IT specialists (10,000 working in industry, R&D, and education); goal is 50,000 by 2005
- Several software parks (mix of private sector and government sponsored) currently in place and more being planned in near term
- Several ICT-related business associations supporting the growth of the ICT sector and expanded use of ICTs by non-ICT firms
- Quality of IT graduates from VN schools is not currently up to international standards
- IT education programs currently exist in 20 Vietnam universities with plans to expand training facilities, number of IT engineers, and training abroad
- Limited Internet access in schools/universities, with aggressive targets for expanding Internet into all levels by 2005
- Not popular use of English in education system (particularly at secondary school level)
- Several private sector IT-related educational institutions being set up in Vietnam (e.g., RMIT, ApTech, NIIT, Microsoft's eDT-Microsoft CTEC, etc.) to meet demand

rural, non-urban areas. The ITU's most recent report (Asia-Pacific) places the population of Vietnam at 78.71 million in 1999, with most having marginal access. The government of Vietnam has included in its plans, improved access to the provinces and communes, though it is unclear what type of universal service/access mechanism is being put in place (beyond simply stating the goals). There are a number of pilots being undertaken to extend Internet to Post Offices and community centers.

There are a number of U.S. high tech firms operating in Vietnam. These include IBM, Intel, Microsoft, Motorola, Oracle, and Unisys. An IT Committee of the Vietnam AmCham has recently drafted a report outlining a number of issues that they feel are hindering the growth of the IT sector in Vietnam (including such issues as IPR, taxes, worker skill level, etc.) In addition, there are an estimated 400 local high tech firms in Vietnam providing mostly local services, though there are some beginning to reach out into the international markets. The bulk of the IT sector is comprised of hardware sales, with minimal software and services. Several business associations, and even IT-oriented business associations provide support in the area of expanding IT awareness in the business community as well as providing conferences, seminars, trade shows, and training. These activities do appear to be having an impact on expanding the local market for IT products and services, and for bringing about some initial collective sector promotion activities.

One issue that presents a significant challenge within Vietnam relative to growing the high tech sector in Vietnam is the current education capabilities within Vietnam. The government education system has been slow in upgrading its curriculum to keep pace with the new tool sets being deployed. Also, English language skills are not introduced widely in secondary school level. For the high tech world, which is largely based on English language tools and content, this is an issue. While the education fundamentals in IT appear to be very solid, and the students very capable, they simply aren't getting adequate opportunity to learn the new tools. Nor do most universities provide access to the Internet—the area where there is the most rapid job growth. Employees must go through extensive search efforts to find a limited number of qualified graduates, and/or invest in their own in-house education programs to develop the needed skills and capabilities. As a result of this weakness and demand imbalance, international private for-profit education institutions are coming into Vietnam to fill the void. There are also a number of donor organization providing support in the education arena, but none specifically target the IT sector.

### **Telecommunications Sector**

Since the launch of the national economic reform process over a decade ago, Vietnam has vastly improved and expanded its telecommunication infrastructure, especially in the availability of modern basic service and cellular services. Most of the telecommunications infrastructure has been built in the last decade. It is modern, digital and built through joint efforts between VNPT and foreign companies. The North-South power cable backbone was built in 1995. According to one source, "Vietnam has one of the fastest growing telecommunications infrastructure in the developing world and the fastest growing telecom market in Southeast Asia." Today, all major and regional urban centers have efficient telephone networks with extensive penetration. Early in 1991, only 100,000 main telephone lines were in operation for a phone density of 0.15

terminals for 100 people—much lower than many other Asian countries. By the end of 1993, figures had grown five times, with most of the switching capacity being automated and digital.<sup>25</sup> Recent figures cited by VNPT reflect a dramatic growth rate to about 5 terminals per 100.<sup>26</sup> At this pace, coverage is likely to become widespread over the next decade. The following chart reflects these dramatic growth rates:

### Teledensity Growth Rates

	1995	1999	CAGR
<b>Vietnam Teledensity</b>	1.05	2.68	26.3%
<b>Asia-Pacific Teledensity</b>	5.49	8.51	11.5%
<b>VN Cellular Subscribers</b>	23.5	328.7	93.4%
<b>AP Cellular Subscribers</b>	24,788	162,459	60.0%
<b>VN Int'l Telephone traffic</b>	38.8	46.6	4.7%
<b>AP Int'l Telephone traffic</b>	9,756	13,890	9.2%

Despite these growth patterns, the following table, based on ITU connectivity data for 1997-99, demonstrates how far the Asia Pacific region<sup>27</sup>, and Vietnam in particular, has to go in catching up to OECD countries in terms of telephone lines, mobile phones, personal computer ownership and Internet penetration.

### ICT Density of Selected Asia/Pacific Countries

	Telephone main lines per 1,000 people 1997	Mobile telephones per 1,000 people 1997	Personal Computers per 1,000 people 1997	Internet Hosts per 10,000 people Jan 1999
<b>Vietnam</b>	21	2	4.6	0.00
<b>Indonesia</b>	25	5	8.0	0.75
<b>Philippines</b>	29	18	13.6	1.21
<b>China</b>	56	10	6	0.14
<b>Thailand</b>	80	33	19.8	3.35
<b>Malaysia</b>	195	113	46.1	21.4
<b>Singapore</b>	543	273	399.5	210.02

Source: World Development Report 1999/00 of the World Bank

While the ITU data are dated, it is useful in comparing Vietnam to neighboring countries and in showing the rate of growth in the later half of the 1990s. Data on 1999 connectivity is found in ITU's Asia-Pacific Telecommunication Indicators 2000 report,<sup>28</sup> which offers a more recent profile of Vietnam's telecommunications infrastructure (see Appendix F) for a series of regional comparative data tables on selected telecommunications indicators):

<sup>25</sup> Francois Fortier, *Fact-Finding Mission to Viet Nam: FAO Support to Agricultural and Rural Development Information Systems*, Draft Report, May 1999.

<sup>26</sup> Vietnam News Service, September 2001.

<sup>27</sup> The United Nations classifies 40 countries and territories as being in in the Asia-Pacific region.

<sup>28</sup> International Telecommunications Union, *Asia-Pacific Telecommunication Indicators 2000*, Geneva, Switzerland. 3 December 2000.

- Number of main lines: 2,105.9 thousand
- Growth rate in number of main lines (1995-1999): 28.4 percent CAGR<sup>29</sup>
- Main line teledensity (lines per 100 population): 2.68/100
- Largest city teledensity: 13.7/100
- Rest of country teledensity: 2.15/100
- Main lines per 100 households: 3.9/100
- Number of cellular mobile phones: 328.7 thousand
- Growth rate in cellular mobile (1995-1999): 93.4 percent CAGR
- Cellular mobile teledensity: 0.42/100
- Cellular mobile as percent of total telephones: 13.5 percent
- Number of ISPs operating in Vietnam: 5
- Number of Internet subscribers: 45,000
- Number of Internet users (June 00 data): 150,000
- Number of PCs in Vietnam: 700,000
- PC penetration in Vietnam: 0.9 percent

Even more recent data collected through this assessment reflect the rapid growth currently taking place in Vietnam's telecommunications sector today:

- There are an estimated 800,000 – 1,000,000 PCs currently in Vietnam, with approximately 70 percent of new PC sales consisting of locally-assembled PCs;
- Current estimates for the number of Internet accounts in Vietnam are placed at between 150,000 and 180,000, with actual users likely 3-5 times this number;
- During the time period of the USAID assessment, VNTP announced that they were approaching a milestone of signing up their 4,000,000 customer, yielding a teledensity of approximately 5:100;
- In recent months, the DGPT has granted approvals for all three major telecommunications carriers to allow them to introduce Voice over IP (VoIP) for domestic long distance and international calls. These services are currently being introduced with VoIP rates being approximately half of normal long distance and international rates;
- A new telecommunications license was just recently issued by DGPT to the Vietnam Electricity Corporation (VEC), called the VEC Telecommunications and Information Company;

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<sup>29</sup> CAGR = Compound Annual Growth Rate

- The new Decree 55 that was recently issued which for the first time allows, totally private ownership of ISPs (up to this point in time, all ISPs have been State Owned Enterprises or SOEs). The goal is to issue up to 10 new ISP licenses (there are now 5, all SOEs) by the end of the calendar year and also is to license a second IXP/IAP (to be government);
- Approval was granted to Saigon Postel (SPT) for a BCC arrangement with a consortium of South Korea firms, whereby the Koreans will provide financing for introducing CDMA-based wireless services (fixed and mobile) for an estimated 700,000 – 1,000,000 new lines over the next 15 years (planned investment totally US\$ 230 million); and
- NetNam (an ISP) is offering a new service with funding from Intel to permit Internet users to receive and send email and fax through any telephone handset (i.e., “unified messaging services” and text to speech technology).

### **Telecommunications Sector Structure<sup>30</sup>**

The Government of Vietnam dominates the telecommunications sector in Vietnam. Under regulatory guidance from DGPT, the Vietnam Posts and Telecommunications (VNPT) is the predominant telecommunications provider and participates in almost all activities and enterprises in the sector. As the largest telecommunications provider, VNPT is a conglomeration of SOEs under one umbrella that offers a full complement of telecommunications services. These include the national network (VTN), the data network (VDC), international (VTI) with a BCC with Telstra, Postal (VPS), 63 local operating companies (with several BCCs including Telstra, France Telecom, and NTT), two trading companies, production facilities, design and construction companies, research and training centers, a finance company (PTF), and hotels. VNPT also has three cellular companies including; Mobifone with a BCC arrangement with Comvick, Call-Link with a BCC arrangement with Singtel, and VMS (Vinaphone). In addition, it has several paging companies (ABC, MCC, Phonelink, Polink, and SEPRO), and payphones (GPC, with a BCC arrangement with Sapura).

A second telecommunication operator is Saigon Postel, which is partially owned by none other than VNPT, but also has direct linkages with MPI, MPS, and HCMC. And most recently, they have entered into a BCC arrangement with the above-mentioned South Korean joint venture consisting of SK Telecom, LG, and Dong Ah Telecom.

A third telecommunications operator is Vietel, a SOE that operates under Vietnam’s Ministry of Defense. And a new license was just recently issued to VEC Telecommunications and Information Company, a SOE under the Vietnam Electricity Corporation (VEC).

Vietnamese research on Internet connectivity began in 1993 at the Institute of Information Technology, which established the first Internet Service Providers (ISPs)--namely Varnet and NetNam. The latter is one of five ISPs licensed to operate in 1997. All five ISPs

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<sup>30</sup> World Bank, *Country Framework Report on Private Participation in Infrastructure in Vietnam*, Augustine Vinh, Principal Consultant, May 1999.

are Government agencies are subject to VNPT's control of the international gateway and access tariffs. The service distribution among these five ISPs are as follows: 1) VNN (57% of market share), run by Vietnam Data Communications (VDC), a subsidiary of VNPT; 2) FPT (28% of market share), a subsidiary of Ministry of Science, Technology and Environment (MOSTE); 3) Saigon Postel (8%), partially owned by none other than VNPT with direct linkages with MPI, MPS, and HCMC; and 4) NetNam (6%).<sup>31</sup> A fifth ISP, Vietel, has recently been licensed and is operated by the Ministry of Defense.

A recent government decree (#55) liberalizes ISP service delivery and allows private ownership for the first time. Ten new ISPs are expected to be licensed by the end of the calendar year; and a second government Internet Access Provider (IAP) is also expected to be licensed in the near future. Currently, VDC is the only Internet Access Provider in Vietnam. It operates a sluggish firewall (Raptor, designed for corporate rather than IAP use), which restricts access to several TCP/IP protocols, in addition to censoring sites blacklisted by the ministries of Police or Culture and Information. By regulation, the firewall only permits web, telnet, mail (SMTP), and file transfer (FTP) protocols, thus blocking access to other services outside of Vietnam (e.g., remote mailboxes (POP3), newsgroups (NNTP), and networked telephony). Voice Over Internet Protocol has recently been introduced and licensed to 3 ISPs, which cuts costs by half (e.g., price per minute for international calls dropped from \$3.00 to \$1.30).

As of January 2001, Vietnam's Internet user base numbered more than 154,000 subscribers (this reportedly represents an annual growth rate of 260 percent against Asian average of 30 percent<sup>32</sup>). Given the growing number of Internet cafes (about 3,500), the actual user base is probably 2-3 times that number. However, this represents about .2 percent of the country's 80 million inhabitants—far below the regional Internet penetration average of 1.1 percent.

International telecommunication costs (“settlement rates”) in Vietnam are among the highest in the world. Tariffs are subsidized and not closely aligned to cost. For example, the highest tariffs are for basic telephoning where the costs are lowest, and the tariff for connection in the cities is higher than for rural areas, where real costs are much higher. While online Internet rates have dropped in recent years (e.g., prices have fallen from VND 460/minute in 1997 to about VND 100/minute today), they still remain perhaps the highest in the region. In addition to high costs, Internet service is highly concentrated in urban centers of HCMC, Hanoi, Haiphong and Da Nang. Furthermore, ISPs mostly cater to the needs of foreign agencies, development community, media and corporate representations, the emerging business sector, academic and research institutes, and an increasing number of government offices. Yet, Internet service suffers from poor quality and slow services, which presents a significant constraint to the growth of the private sector. VDC plans to double capacity of access lines in the next few months to speed connections and reduce rush hour congestion (e.g., services in HCMC are reportedly twice as fast as last year<sup>33</sup>), as well as upgrade its firewall to correspond to the size

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<sup>31</sup> <http://www.vnnic.net.vn/english/documents/index.html>

<sup>32</sup> Vietnam News Service, September 2001.

<sup>33</sup> Ibid.

and needs of a national gateway that should speed up international data traffic. VNPT also plans to restructure into two separate corporations (i.e., postal and telecommunications) by 2003 to improve management and service delivery. A trial separation is underway in 11 provinces.

Despite these recent developments, government policies are one step behind the industry. The telecommunications sector faces a number of obstacles in common with many developing countries: technical and managerial deficiencies; unequal access, particularly between rural and urban areas; shortages of funds for capital expansion, and restrictive regulations. These problems are exacerbated by a legacy of heavy centralized control. At present, Government views telecommunications as a strategically important part of the country's infrastructure and prohibits private foreign ownership in operations, while permitting only limited private participation through Business Cooperation Contracts (BCCs), which allow foreign companies to finance capital investment and share in revenues but have no direct involvement in operations.

At present, there is no competition in fixed line telecommunications or in cellular services, since VNPT is a major shareholder in service delivery. While there is growing recognition that the VNPT's monopoly is hampering the development of the sector, there are also legislative pressures to liberalize the telecommunications market that will emerge from the recently ratified US-Vietnam Bilateral Trade Agreement as well as entry requirements for World Trade Organization (WTO) membership. The government is also actively seeking alternate forms of private participation in infrastructure from both foreign and domestic companies in light of declining levels of FDI in recent years, growing competition from other countries in the region for prospective investors, and growing resistance among foreign investors in pursuing further BCC arrangements.

### **IT Sector**

The IT sector in Vietnam is quite young, but very dynamic and experiencing rapid growth. While the software sector is being targeted by the government as an area with especially high potential for exports, at this time the sector is predominately domestically oriented, and primarily hardware driven.

The domestic IT demand for the year 2000 was placed at US\$ 240 million. Of this, hardware accounted for 80 percent, software 8 percent, and services 12 percent. There are an estimated 300 IT firms currently operating in Vietnam, with 50 of these engaged in software production and 100 engaged in IT services. It is estimated that local firms have approximately 35 percent of the Vietnam market (with a goal of having 60 percent by 2005 having been set by the government). The software sales were estimated at US\$ 50 million in 2000, with the government seeking to grow this to US\$ 500 million by the year 2005.

The local IT sector has strong support from the government with tax incentives aimed at encouraging investments in this sector, and some income tax benefits allowed in specific situations. In addition, there are a number of government supported IT and even software parks currently in place, under construction, or being planned (in and around both Hanoi and HCM City). In addition, there are several private-sector IT/SW parks in place and being put in place. The focus on software is in part based on what is thought to be a competitive advantage in

Vietnam of highly capable work force and relatively low wages in Vietnam (some studies indicating costs are approximately 1/20 of that of US and 1/7 of that of India). While the domestic market is currently growing, the ultimate focus of growth in the software market is the global/international marketplace. While it is well understood that there is a downturn in this arena, the long-term demand will likely continue to grow and Vietnam views this as a strategic opportunity.

At present there are a number of U.S. IT companies with offices in Vietnam. These include firms such as CISCO, Compaq, Hewlett-Packard, IBM, Intel, Microsoft, Motorola, Oracle, and Unisys. These companies have all come to Vietnam in an effort to work in the domestic market. And while each are having varying levels of success, there are a number of key issues that present serious constraints not only for their own success, but for overall growth of the IT sector in Vietnam. These have recently been captured in working papers by the AmCham's IT Committee and include issues such as; lack of IPR protection, restrictions on Internet access, excessive and inconsistent taxation, high telecommunications costs, and weaknesses in the local educational system.

### **E-Commerce**

The Ministry of Trade is in the process of developing a Master Plan for E-commerce that proposes to bring the majority of Vietnamese businesses on line by 2005 through a series of 14 projects. This Master Plan addresses the need to develop a legal infrastructure to support E-commerce over the next few years, which includes the development of an electronic payment system, information security systems, digital signature, financial and taxation policies, policies to protect intellectual property rights, and consumer protection laws. Despite the lack of legal infrastructure to support e-commerce, a growing number of firms are exploring a variety of ICT applications to support their business operations. Several interesting initiatives include the following:

- One effort supported by Oracle involves the establishment of an E-Marketplace in Da Nang, in which local Vietnamese companies will be able to link up with other firms outside of Vietnam as well as have international firms link up with Vietnamese firms.
- A partnership between FPT<sup>34</sup> (one of Vietnam's ISPs and a software development company) and a U.S. online sourcing company will promote e-commerce services similar to MeetChina.com, which promotes goods manufactured by its 70,000 Chinese member companies to overseas buyers. It is assumed this partnership will result in "MeetVietnam.com" with similar E-commerce services.
- A variety of e-commerce activities are being jointly funded by the Japanese computer giant Fujitsu (\$100,000), the Ministry of Trade (\$71,000), and the State Bank of Vietnam (\$100,000), which include experimenting with various e-commerce models, designing commercial websites for ministry enterprises, Internet awareness promotions, and the deployment of security and e-payment systems.<sup>35</sup>

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<sup>34</sup> <http://www.fpt-soft.com>

<sup>35</sup> Total Telecom. July 5, 2000. <http://www.totaltele.com>

- The IDRC of Canada is funding (\$96,000) a study on the obstacles to e-commerce for SMEs, that includes the issue of developing a digital signature act;
- The Quang Trung Software City, inaugurated last March outside of HCMC, is considered to be the chief software development center for Vietnam. This software park will eventually house over 100 businesses in addition to IT training and research development facilities. Several other software parks are being established in Ho Chi Minh City (Saigon Software Park), Da Nang (Softech), and outside of Hanoi (Hoa Lac). In addition to tax incentives, these software parks are intended to promote the development of e-commerce and offer upgraded Internet access facilities that bypass the national firewall.
- In addition to these E-commerce specific initiatives, the Internet is being used by some of the current software parks and IT associations to promote their members and their products. For example the HCM City Computer Association developed a website with support from the World Bank to showcase their members and their products.<sup>36</sup> The Saigon Software Park (SSP) currently houses approximately 30 software firms and provides a website for its members to showcase their products and services.<sup>37</sup> One of the firms residing in this software park is Vietnam Think.com Inc. This firm provides a complete e-commerce and e-government solution set.<sup>38</sup> Its products and services include an “eMarketplace” that provides information for international investors and local enterprises, and an “eShoppingMall,” which is an online forum to display Vietnamese businesses and products.<sup>39</sup>
- The Vietnam Chamber of Commerce and Industry (VCCI), which has two chapters in Hanoi and HCM City, operates a software development center and a business information center that include a physical software showroom as well as an initial virtual software showroom.<sup>40</sup>
- UNDP’s Trade Promotion Project is sponsoring a training seminar (October 2001) for government staff on e-commerce; and
- Japanese funds an E-ASEAN training program in the Philippines to promote e-commerce, with emphasis on e-payment systems, certification, taxation and customs issues.
- As part of experiment on operation model of E-commerce, a pilot E-payment system has been carried out by the Vietnam Industrial and Commercial Bank (INCOMBANK) since 1999. This project has been an effort to prepare the follow-up steps toward

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<sup>36</sup> <http://www.hcmste.gov.vn/hca/>

<sup>37</sup> <http://www.saigonsoft.com>

<sup>38</sup> <http://www.vietnamthink.com>

<sup>39</sup> <http://www.vcci.com.vn> and <http://www.vietsoftonline.com.vn>

<sup>40</sup> <http://www.vcci.com.vn> and <http://www.vietsoftonline.com.vn>

integration to international and regional e-payment system. The first Website of the Bank has been introduced since October 2000 up to link with the bank's branches in provinces and clients and up to now there are approximately 3.7 millions users nationwide. Some infrastructure has been put in place, some on-line services provided, and ATMs set up in some cities. Access to the Bank's website is on the rise. The card services via this system will be introduced in 2002 in Vietnam. With this pilot E-payment system, INCOMBANK has just been granted a license to work in Hoa Lac High Tech Park, the first official license of this park since its launching operation.

### **Vietnam's Human Capital Base**

There are an estimated 20,000 public education institutions in Vietnam that include 10,000 primary schools, 5,000 lower secondary schools, and 1,500 upper secondary schools with an estimated enrollment of 22 million students. At present, there are 20 IT faculties in Vietnam's various universities and colleges, 45 technical colleges with IT programs, and about 67 vocational schools with IT subjects. It is estimated that at present there are approximately 20,000 IT professionals (with bachelors' degrees) in Vietnam, with 10,000 working directly in the IT industry on research and development or in education services.

A number of private schools are entering the local Vietnamese market with a specific aim at developing IT professionals. The Royal Melbourne Institute of Technology (RMIT) has recently opened a school in HCM City, with plans underway to build a large campus near HCM City. ApTech is yet another private education institute providing IT-related programs in Vietnam. And a third is the NIIT. In addition to the more formal education/school system in Vietnam, there is considerable IT-related training being provided by IT-related business associations. The Vietnam Association of Information Processing (VAIP) has been instrumental since the early 1990s in providing IT-related awareness over public TV and in setting up 90 IT training centers throughout Vietnam. These centers issue approximately 1,000 certificates a month. In addition, the VAIP sponsors an annual IT Olympiad with participation from each university in an effort to promote student IT learning. The Vietnam Chamber of Commerce and Industry (VCCI) through its two chapters in Hanoi and HCM City provide a wide array of IT-related workshops, seminar, and training opportunities to its members and the business community.

One issue that presents a significant challenge relative to developing the IT sector in Vietnam is the current education capabilities. In addition to the need for a considerable growth in numbers, there is an urgent need to significantly improve the quality of IT education at the university and college levels. The government education system has been slow in upgrading its curriculum to keep pace with the new tool sets being deployed. Also, English language skills are not introduced until the university level, which is an important constraint to competing on the global market since the IT sector is largely based on English language tools and content. While the education fundamentals in IT appear to be very solid, and the students very capable, they simply aren't getting adequate opportunity or hands-on experience and training in new tools and techniques. Nor do most universities provide access to the Internet—the area where there is the most rapid job growth. Employees must go through extensive search efforts to find a limited number of qualified graduates, and/or invest in their own in-house education programs to

develop the needed skills and capabilities. A recent recruitment notice for IT specialists by a Singapore firm yielded only 3 qualified candidates out of 1,000 applications! Four principal shortcomings in Vietnam's current IT education can be identified: 1) the tools being taught at local universities are typically COBOL and PASCAL, programming languages no longer in use; 2) the lack of access and experience on the Internet; 3) lack of working skills or experience in teams; and 4) inadequate instruction or emphasis on English language skills at all levels of formal education.

This observation of poor quality of in-country education is reflected in a recent study conducted by the Political and Economic Risk Consultancy Ltd., in which a Human Resource Index for Asian countries was developed. This index included a ten-point scale on variables such as overall quality of local education system, availability of high quality production labor, availability of high quality clerical staff and high quality management staff, English proficiency, and high-tech proficiency. Vietnam ranked low in virtually all categories (e.g., none were above 3.50 on a scale of 0-10), with the high-tech proficiency ranked 2.50 -- the lowest of all countries included in the survey! English proficiency was also ranked the lowest of any country (including China) with a ranking of 2.62 out of 10. A consolidated index of the education and human resource environment in Asia rated Vietnam at 3.79 out of 10, with Indonesia being the only country with a lower score than Vietnam (South Korea was rated at 6.91; Singapore 6.81; Japan 6.50; Taiwan 6.04; India 5.76; China 5.3; Malaysia 5.59; Hong Kong 5.28; Philippines 4.53; Thailand 4.04; Vietnam 3.79; and Indonesia 3.44).

### **Donor Activities**

For the most part, donor activity in the ICT-related elements in the private sector focus on education. In addition to the private sector educational activities mentioned above, there are a number of education-oriented efforts by various donors, including some activities which target training in the IT arena. In addition, there are a number of private-sector firms (e.g., Coca Cola, IBM, Intel, etc.) that have already and/or have plans for various small-scale IT-related education programs at the primary and secondary school levels. These later are covered in the next section of this report.

Major donor activities in the education arena include the following:

- **AusAID**—AusAID has a scholarship program for approximately 200 students each year. Approximately 20 of these chose IT-related undergraduate programs. In addition, AusAID is collaborating with the World Bank in what is called a “Virtual Columbo Plan” that is seeking to integrate ICTs into the delivery of education.
- **Belgium**—Belgium's donor assistance focuses on primary education with an emphasis on ICTs for assisting teachers
- **British DFID**—The British donor assistance program focuses on lower secondary education with teacher training orientation
- **USAID**— Within the 2 year USAID-funded projects for the NEU/Business School in Hanoi, a Master program will be delivered by the Australia's Macquarie Graduate School of Management of Macquarie University, using distance learning techniques via the Internet with on-line library access, and on-line retailing and Internet

marketing subjects. An inter university network (Inter-U-Net) is also to be set up to link 5 universities in Asia and the US.

# Vietnam: ICT Assessment

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## IV. People and Application Activities

The People and Applications Activities component included in this ICT assessment addresses ANE's sub-IR 23.4.2. This is described as follows:

### *23.4.3 – People & Application Activities*

*In addition to specific ICT sector development activities, the Bureau has an opportunity to support the development of ICTs as a platform for development. In other words, ANE can help develop cross SO activities that use the Internet (and other ICTs) to deliver better, wider, and/or more relevant services to the Agencies targeted constituencies. For instance, the Africa Bureau has AfricaLink, a USAID initiative to facilitate access to the Internet for its colleagues and partners in Africa in the agricultural, environmental, and natural resource management sectors. This program has used the Internet to greatly enhance service delivery.*

*Illustrative projects could include:*

- *Developing community portals for specialists working in health care and higher education;*
- *Supporting E-Government activities;*
- *Creating a “virtual mentoring” program, which links local NGO and government officials with mentors in the U.S. through the Internet;*
- *Developing and implementing web-based monitoring and evaluation tools;*
- *Providing start-up funds for specific development application; these start-up funds could be provided by a combination of private support and government.*

### **Summary/Analysis**

News stories are increasingly appearing on how the Internet is benefiting individuals and businesses throughout Vietnam -- from selling paintings online to providing tailoring services, facilitating exports and tourism, and giving voice and jobs to disabled persons. Although the Internet was only introduced some 3-4 years ago, government, the donor community, NGOs and the business community are undertaking a variety of ICT initiatives to support the Government of Vietnam's social and economic development agenda. These initiatives fall into the following categories: 1) increasing access to information among rural and underserved populations; 2) building human capacity, especially for training of IT experts and enhancing learning communities in all social sectors (i.e., formal education, professional development, community education); 4) promoting e-governance; and 5) promoting economic growth through E-commerce and software development.

In addition to the government's focus on expanding telecommunications, growing the IT sector (hardware, software and services), and enhancing the educational system that supports this growth, the government of Vietnam is also committed to expanding the use of ICTs in both the

public and private sectors. In fact in a number of the Decrees there is a focus not so much on the technology as there is on information—capturing it, analyzing it, and using it in a wide array of application areas.

Within the Ministries themselves there is a general trend toward improving the skill levels regarding use of ICTs, and focusing on the development of databases to support economic, agricultural, water resource management, etc. Past and current efforts have focused on getting some initial infrastructure in place, linking the desktop PCs via LANs and WANs. Now the focus appears to be increasingly focused on applying these resources with more sophisticated application and use. In this regards the life cycle taking place in Vietnam is quite consistent with what has taken place in the U.S. several years ago. Several application areas surfaced in this short assessment and are currently underway. A more comprehensive review and examination of the IT Master Plans for 2001-2005 that all Ministries are now developing would likely reveal a much larger number.

In the area of e-commerce, here too there is considerable movement, though there is a real lack of the requisite legal infrastructure in place. Plans do exist within the Ministry of Trade (MOT) for addressing this weakness. In the interim, there are a growing number of firms placing information on the Internet, though these lack transaction capabilities. Several larger e-commerce applications are surfacing where the technologies are more sophisticated and where the efforts reflect joint-activities with several firms combining their efforts. Some of these are commercial while others are part of broader industry support activities.

#### **Findings: People & Application Activities**

- Government commitment to expand use of ICTs in all Ministries with established targets for expanded ICT penetration and specific applications (e.g., health, education, agriculture, etc.)
- Growing number of Ministries going on-line with preliminary Websites in place or under development
- Potential project for automating Customs under discussion with Unisys (based in part on TDA feasibility study)
- Dialog taking place between VDC and Anderson Consulting on possible future engagement
- Enterprise registration system under development with support from EU
- Increasing growth in use of ICTs by SMEs within Vietnam
- Some limited use of the Internet for e-commerce is taking place, but still very limited due to lack of awareness and lack of legal infrastructure
- Potential larger scale E-commerce project (e-marketplace) emerging in Da Nang for linking Vietnam businesses with U.S. firms (Oracle)
- E-Payment system has been embarked by Incombank as a trial operation model of E-commerce
- Growing number of software packages targeting local environment are being introduced into the Vietnam market
- Variety of small-scale private sector pilots addressing computer learning at secondary school level (e.g., Coca Cola, IBM, Intel)
- No large-scale or IT-specific focused donor programs underway in Vietnam, though some limited scale project are in discussion (e.g., SchoolNet and WorLD Links, etc.)
- Small pilot using Internet/Web to demonstrate value of Internet and deliver specific information targeting farmers in rural areas (e.g., farmer Website linked with community radio in 4 communes, "Internet for All" connecting 30 PT&Ts/Cultural Centers to the internet, etc.)

There are also a number of application areas where ICTs are being introduced into primary and secondary education. These are not well coordinated, several supported by U.S. private sector firms operating in Vietnam, but none-the-less, reflect a strong commitment to make a difference in targeted areas.

## **E-Government**

The government of Vietnam's commitment to leveraging ICTs includes a strong commitment to computerizing government administration and management, which is embodied in a recently updated government decree.<sup>41</sup> The Government established an intranet that involves networking 40 government agencies at the central level and 61 provincial centers in a Wide Area Network. At present, there is a reasonable level of automation within the various government ministries, with a growing number of PCs and Local Area Networks (LANs). Current use of the Internet by government ministries appears to be quite limited and is the object of specific targets in the current planning process to have 50 percent of state government officials capable of using PCs and the Internet by 2005.

Within the Ministries themselves there is a general trend toward improving the skill levels regarding use of ICTs, and focusing on the development of sector databases and management information systems. The Government is in the initial stages of computerizing public services in the banking, finance, aviation, customs, and the tourism sectors. Several government projects to automate services include Social Security, National Defense, and the General Department of Customs (GDC). The latter is based in part on a feasibility study funded by U.S. Trade and Development Agency and Unisys and involves networking the operations of 31 departments, as well as other cooperating agencies (e.g., Finance, Trade, Health, etc.) in several geographic locations. Another project involves an enterprise registration system funded by the European Union, which provides greater transparency and eliminates paperwork---but, since there is no digital signature yet, businesses still have to secure applications in person. Discussions are also taking place to introduce automation to assist the VDC in some of their telecom-related activities, with possible grant funding from Japan. With respect to the E-government component of the E-ASEAN initiative, a feasibility study is underway to demonstrate a "one-stop-shop" approach to delivering government services to citizens through a pilot project in one district of HCMC. This will include a two-way query system between business and government in areas such as taxation, customs, etc.

### **Improving Access in Underserved Areas**

In an attempt to enhancing the Internet access in rural areas, a plan to widen internet use at commune level has been underway by VDC. As a kicking-off activity of this plan, there is a trial internet connection to 12 cultural post points at commune level in 9 provinces nationwide, including Bac Ninh, Thai Binh, Lang Son (in the North), Nghe An (in the Centre) and Dac Lac, Gia Lai, Kong Tum, Tra Vinh and Can Tho (in the South). To complete this plan, 400 cultural

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<sup>41</sup> Government Decree #112 on Computerization of Government Services, August 2001; see also Government Resolution 173-CP/1975 and #245-CP/1976 on Computerizing Administration.

post points will be provided with free internet access to websites to deliver useful information on agricultural production, cultivation and husbandry and so on to address farmer's information needs. It is scheduled to carry out a preliminary assessment of this pilot activity before taking further steps forward to accomplish this plan and decide to expand it to 5,000 points of this type over the country in the forthcoming years.

VNPT has extended telephone lines to 89 percent of all communes and plans to connect 5,000 communes nation-wide with Internet service at post offices and village cultural centers. Telephony in remote areas has been established through local wireless loops (Korean company). These services are currently being piloted in selected provinces and towns and will eventually provide up-to-date regional and world news, weather forecasts, market and agricultural news, and other health and education information services for community members. VNPT is also piloting a WEB-TV service to make e-mail and information from websites available for the country's many television viewers.

The government of Vietnam has set targets for expanding Internet access by 2005 to 50 percent of government offices; to all universities and colleges and in 70 percent of middle schools; to 60 percent of the hospitals; to 70 percent of SOEs; and 50 percent of Vietnam's villages. These are ambitious targets, given that less than one third of public schools are currently equipped with computers (e.g., 80 of 228 schools have computers in Hanoi). With regard to rural areas, VDC has developed an "Internet for All" pilot program in cooperation with the Ministry of Culture and Information to demonstrate the use of the Internet (e.g., posting university examination results) and provide basic computer training for about 30 pilot communes in ten provinces. In addition to piloting Internet services in hospitals, this initiative includes a website for farmers that was launched several months ago in four pilot communes to provide farmers with current information on market prices for crops and commodities, export markets, and fisheries. This program builds on village radio systems, which broadcast daily market information retrieved from the website. Feedback from farmers is channeled through a local post office operator to guide radio content and the website's ongoing development. Government plans to expand this program into other regions and across sectors. VNPT is also planning to expand rural access to educational and health services through satellite delivery in 2003 when VINASAT is planned to be launched.

### **Human Capacity Building and E-Learning**

There are a number of human capacity related activities underway with in Vietnam, with the following providing information on several of these:

- **University Initiatives.** In support of government targets to train 50,000 IT professionals by 2005, a growing number of IT training centers are being established at universities and separately funded training centers across the country—with technical assistance most notably from India and Japan. Several Indian companies (Aptech and NTTI) have recently established IT training centers in Haiphong, Da Nang, Hanoi, HCMC, Da Lat and Can Tho. The Japanese International Cooperation Agency (JICA) is supporting the development of an E-Learning Center at the software park being developed outside of Hanoi and is providing substantial technical assistance to upgrade the IT curriculum and

faculty at the National University in Hanoi (i.e., Vietnam Information Technical Training Institute). With funding from the International Finance Corporation and other donors, the privately owned Royal Melbourne Institute of Technology (RMIT) has established a two-year IT degree program in HCMC, with a significant distance-learning component including a videoconferencing facility. Several other MBA programs are being introduced that will incorporate distance-learning activities (e.g., University of Hawaii with the Hanoi School of Business and Boise State University at the National Economics University in Hanoi). The Hanoi University of Technology operates a distance-learning center using a leased line from VDC. Overseas scholarship programs for IT are being supported through AusAID; the World Bank and AusAID announced a new scholarship program, the Virtual Columbo Plan, which will use ICTs for distance learning; and scholarships for US-based graduate study in science and technology fields will soon be available through a new initiative of the US Embassy (“Debt for Education Swap”), that will provide \$5 million a year over 15 years.

Several important initiatives to support E-learning at universities in Vietnam include an Information Resource Center at the University of Danang. With donor support from the East Meets West Foundation, this new facility offers free Internet access to business and engineering students (96 computers) and instructional support with a local area network of 25 additional computers. Similar E-library initiatives are being planned for universities in Hue, Ho Chi Minh City and the National University in Hanoi. The World Bank and RMIT recently organized a conference to facilitate library networking among Vietnam’s universities. In addition, a World Bank higher education project is providing funding (up to \$500,000) to enhance library services and to support distance learning and teacher training at about 13 universities throughout the country (including the Foreign Language Institute in Hanoi and Da Nang University). The Hanoi Open University, a private entity, is also planning to tap the potential of online networking for its undergraduate instruction, currently delivered through radio broadcasts, TV transmission, video and audiotapes, and more recently CD-ROMs. The School is discussing plans to develop an Intranet for its distance education student population of about 15,000 at 19 centers throughout the country.

- **Teacher Training and Computer Literacy Programs.** Several private corporations are funding pilot teacher training programs for primary and secondary levels. The global IBM for Education program is funding a three-year project with the Ministry of Education to provide ICT training at a teacher training college in Hanoi and four primary schools. IBM also funds a Kidsmart program, providing hardware and software for a kindergarten ICT program. Intel plans to launch a major teacher-training project in 2002, “Teach to the Future,” that will involve training 5-10,000 primary and secondary school teachers per year using their ICT curriculum. Several donors are supporting teacher training using distance learning methods (Belgium and British DFID). The Asian Development Bank has also developed a proposal for a secondary teacher education project with an ICT component. While public schools are targeted to be online by 2005, computer literacy projects are also springing up outside the formal school system. With funding from the Coca Cola Company, the Ministry of Education and Training in collaboration with the National Youth Union have established 40 E-learning centers in 33

provinces and cities throughout the country. Centers are equipped with computers providing Internet and e-mail access, software, and textbooks, which are used both during and after school hours by about 10,000 children, aged 11-18. In many locations, the Learning Centers offer youth their only access to computer study facilities. NGO's have also supported computer literacy training: CARE developed a computer skills' and business development training program for commercial sex workers outside of HCMC several years ago; and Holt International (with Microsoft funds) has established a community computer skills training program for disadvantaged youth outside of HCMC. In addition, the majors of both Hanoi and HCMC have plans to implement community-based computer literacy training programs.

- **Professional Development.** Several important professional development programs are also exploring ICT applications to enhance learning systems. The Vietnam Development information Center, part of the World Bank's Global Distance Learning Network, began offering specialized courses in January 2001 for government civil servants using distance learning videoconferencing facilities. The Australian aid agency (AusAID) funds a large public sector training project, which has established a computer resource center (25 computers) to support teacher training, English language training, and follow-up support for domestic and overseas project trainees. Computer skills training is also being targeted in a UNDP-funded public administration reform project with the Ministry of Agriculture. While Cisco and Microsoft have funded technical and project management training in telecommunications for VNPT staff, the Japanese telecommunications project provides training in maintenance and installation of IT facilities at the Post and Telecom training centers in Hanoi and HCMC.

Knowledge networks are also proliferating in a variety of professional communities working in Vietnam that include web-based discussion groups, online databases, and management information systems. Some of the most interesting ones include:

- Intranet developed by NetNam involves a national indexed website of R&D information and scholarly publications from over 300 English-language sites and 60 Vietnamese websites with a search engine in Vietnamese (IDRC funded);
- MekingInfo is a web-based information network for sharing regional information on natural resource management and forestry;
- MOH computer network for medical schools supports training and service delivery for disabled persons (USAID funded);
- A website recently launched by the Ministry of Finance in English provides legal, financial and investment information about Vietnam to raise corporate awareness in areas of taxation and FDI with plans to develop an online query service;
- An information network (Business Vietnam Open Market) for IT companies has recently been developed by an NGO as an "e-commerce bridge" to help Vietnamese businesses promote their products and services among international clients;
- Efforts to establish a chapter of the International Internet Society (ISOC) are underway;

- Institute of Water Resources and Remote Sensing Center under Ministry of Agriculture are developing software to automate and manage their information services;
- Other ministry databases and intranets are being developed on disaster management, agriculture, market services, forestry, disaster management, and HIV/AIDS; and
- Government-sponsored website for Viet Kieu as part of an effort to attract investment and IT expertise from expatriate Vietnamese (e.g., I-Connect Vietnam at Stanford University).

In addition to the formal education system in Vietnam, there is considerable IT-related training being provided by several business associations. Since the early 1990's, the Vietnam Association of Information Processing (VAIP) has been instrumental in providing IT-related awareness over public TV and in setting up 90 IT training centers throughout Vietnam. These centers issue approximately 1,000 computer proficiency certificates a month. In addition, VAIP sponsors an annual IT Olympiad with participation from each university in an effort to promote student IT learning. The Vietnam Chamber of Commerce and Industry (VCCI) also provides a wide array of IT-related training opportunities to its members and the business community through its chapters in Hanoi and HCM City.

### **Other Applications**

Another dynamics is the Government's effort to associate itself with the E-ASEAN initiative. In November 2000, Vietnam joined as a signatory of E-ASEAN Framework Agreement and a member of E-ASEAN Task Force group. Within this framework agreement, ASEAN countries have enacted a number of joint policies and 19 projects, one of which is the E-Business Readiness project of ASEAN countries. The Ministry of Trade of Vietnam has been active in the implementation of this project. The Singaporean National University, Harvard University and IBM jointly consulted the first phase of this project by using questionnaires to assess the business readiness of ASEAN countries. The preliminary report of this project will be presented to the 7<sup>th</sup> ASEAN High Summit to be held in Brunei this November 2001.

### **Donor Activities**

There are a limited number of areas where foreign donors either have been, are presently, or are planning to become involved in ICT applications. The US-TDA did partially fund two feasibility studies in Vietnam, the Quang Trung software park in HCMC and the customs information system. Japan (through not JICA) was engaged in supporting the VDC in some of their telecom activities. The EU is working on an enterprise registration system with the MOT. There is also the joint e-ASEAN initiative with e-commerce and e-Government components. The World Bank did have some earlier engagement with DGPT in the regulatory arena as well as helping the HCM City Computer Association build an initial Website, but support for both appear to be over at this stage. Funding, possibly from donors is being sought for the customs system as well as the e-commerce activity at Da Nang. USAID has started to fund a Natural Disaster Management program for Vietnam, which includes the installation of a weather radio and pager based coastal storm and typhoon early warning system in 7 coastal provinces of

Vietnam. This warning system will use U.S information technology consisting of weather broadcast stations, simulcast coastal storm warning stations serving the North, Centre and Southern parts of the country in an attempt to giving the widest possible dissemination of warning of predicted natural disaster events in the shorted period of time to the largest possible number of potential affected people.

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## Appendix A – G-8 Okinawa Summit Summary

As recently as July 2000, the leaders of the world's most power nations met at the G-8 Summit in Okinawa, Japan, and as part of their agenda addressed the concerns of the global digital divide. The result was the development of the Okinawa Charter on Global Information Society, and the launching of Digital Opportunity Task Force (dubbed the “DOT” Force).<sup>42</sup> The DOT Force will mobilize resources and coordinate the efforts of governments, the private sector, foundations, multilaterals, and international institutions and others to bridge the international digital divide and create digital opportunities.

This Okinawa Charter and the DOT Force were undertaken in recognition that the developing countries are not fully participating in the information revolution. It was acknowledged that the following situation exists:

- Of the estimated 332 million people online as of March 2000, less than 1 percent (2.77 million) live in Africa (Nua Internet Survey, March 2000);
- Less than 5 percent of the computers that are connected to the Internet are in developing countries; and
- The developed world has 49.5 phone lines per 100 people, compared to 1.4 phones in low-income countries (International Telecommunications Union, 1999).

The global call to action coming out to the G-8 Summit called upon companies, foundations, and non-government organizations to help create digital opportunities for the people of developing nations to take concrete steps in five strategic areas:

- **Fostering Policy, Regulatory, and Network Readiness:** Help developing countries adopt practices, and regulatory frameworks that will encourage private sector investment but also reap the full economic, social, and cultural benefits of the widespread diffusion of the Internet, e-commerce, and other information and communications technologies;
- **Expanding Basic Connectivity to People Everywhere:** Support the expansion of community access points or other forms of shared connectivity so that the Internet and telecommunications services are within walking distance for everyone on the planet. Invest in R&D that will lead to products and services tailored to the needs of developing countries and poor communities everywhere, such as low-cost, low-power, wireless devices;
- **Building Human Capacity in Education and Training:** Increase significantly the number of people in developing nations with the technology skills and know-how needed to build, manage, and effectively use the information infrastructure of the 21<sup>st</sup> century. Equip more people in developing nations become "technologically literate" through the

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<sup>42</sup> <http://www.ecommerce.gov/ecomnews/pr0725001.html>.

appropriate use of educational technology in schools, universities, communities, and the workplace;

- Enhance Healthcare and Quality of Life Using Information Technology: Promote applications of the Internet and information technology--such as e-health, distance learning, natural resource management, and preservation of cultural heritage, that have particular relevance to improving the quality of life for the people of the developing world; and
- Create New Opportunities for Small and Medium-sized Enterprises through e-commerce and e-business: Encourage the development of micro-enterprises and small businesses that harness the power of new information and communications technologies. In all societies, develop venture-financing sources that can drive innovation.

With regard to the United States, then President Clinton, in partnership with corporate and non-profit leaders, announced several new steps to bring digital opportunities to developing countries.<sup>43</sup> This included expanding the number of countries participating in the Internet for Economic Development (IED) Initiative. In addition, President Clinton announced several new ICT-related initiatives involving the Ex-Im Bank, the Overseas Private Investment Corporation (OPIC), as well as several additional public-private, multilateral, and foundation-sponsored activities aimed at narrowing the digital divide gap.

This ICT Assessment is predicated in large part on the recognition of the very same dynamics as reflected in the G-8 Summit's "Call to Action." Further, this Assessment puts forward an integrated set of proposed activities that hold substantial promise for bringing about a catalytic change for bringing about fundamental changes within the Vietnam economy.

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<sup>43</sup> <http://www.ecommerce.gov/ecomnews/pr0725002.html>.

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## Appendix B – Digital Economy 2000

On 5 June 2000, the U.S. Department of Commerce (DOC) issued the third annual report on the information technology revolution and its impact on the U.S. economy, titled "Digital Economy 2000."<sup>44</sup> This series of reports has been critical to providing a more comprehensive understanding on the direct and indirect role/impact of the ICT sector within the U.S. In introducing the report, then Vice President Gore presented several key highlights from the report:

- IT accounts for half or more of the improvements in productivity since 1995. With 2.8 percent productivity growth from 1995 to 1999--double the 1.4 percent rate of 1973 to 1995. The U.S. has a new economy. Improved productivity has lowered inflation and raised real wages;
- IT is lowering inflation. Falling IT prices have directly pulled down average inflation by 0.5 percentage points a year. In addition, by raising productivity, IT is lowering inflation of other industries; and
- The IT sector is rapidly creating jobs at high wages. IT jobs average \$58,000 a year, 85 percent higher than the average for the private sector. Between 1994 and 1998, employment in IT industries expanded by 30 percent, from 4.0 million to 5.2 million jobs. IT occupations that pay the best and require the most education have been growing most rapidly.

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William M. Daly, then Secretary of Commerce, writes in the Report's preface:<sup>45</sup>

*"What we can see clearly are expanding opportunities. To meet these opportunities, we will have to ensure a stable and conducting economic and legal environment for continuing innovation in information technology and e-commerce. We need to encourage the building of a broadband infrastructure that allows all Americans to have access to the advanced services that support the Internet, and take the steps necessary with respect to privacy, consumer protection, security, reliability, and intellectual property rights that will inspire confidence in the Internet. To realize the full potential of this digital economy, every person and every business must be able to participate fully and make their own unique contribution to its development."*

The Executive Summary of the Report provides a strong message with regard to the impact on ICTs within the U.S. economy. In addition to the above highlights, these include:

- The Internet in particular is helping to level the playing field among large and small firms in business-to-business e-commerce;

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<sup>44</sup> <http://www.ecommerce.gov/ecomnews/pr060500.html>.

<sup>45</sup> <http://www.doc.gov>.

- There is growing evidence that firms are moving their supply networks and sales channels online, and participating in the new online marketplaces;
- Advances in information technologies and the spread of the Internet are also providing significant benefits to individuals;
- The vitality of the digital economy is grounded in the IT-producing industries--the firms that supply the goods and services that support IT-enabled business processes, the Internet, and e-commerce;
- Although IT industries still account for a relatively small share of the economy's total output--an estimated 8.3 percent in 2000--they contributed nearly a third of real U.S. economic growth between 1995 and 1999;
- IT industries have also been a major source of new R&D investments;
- New investments in IT are helping to generate higher rates of U.S. labor productivity growth;
- Growth in the IT workforce accelerated in the mid-1990s, with the most rapid increases coming in industries and job categories associated with the development and use of IT applications;
- Analysis of the computer and communications industries in particular suggest that the pace of technological innovation and rapidly falling prices should continue well into the future; and
- Businesses outside the IT sector almost daily announce IT-based organizational and operating changes that reflect their solid confidence in the benefit of further substantial investments in IT goods and services.

While the above reflects current dynamics taking place in the U.S. economy relative to the ICT sector and its broader impact on the economy, it also reflects the potential value of ICTs in other economies--including developing and transitioning economies. Clearly, the potential leveraging capabilities of ICTs within Vietnam are considerable with regard to assisting USAID/Vietnam in meeting its objectives, and in bringing about fundamental benefits to the Vietnamese economy and its people.

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## Appendix C – ANE Bureau’s ICT Initiative

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## 1. Executive Summary

Information and Communication Technologies (ICTs) are transforming the way people live, learn and work. Further, ICTs have a roll to play in enhancing an array of development activities. The ANE Bureau has recognized this, and like other Bureau's has decided to take a lead role in developing and implementing innovative ICT activities.

The new world of ICTs is developing in parallel with significant changes in the assistance environment. No longer are governments, international organizations and multilateral development banks the only assistance donors. Rather, over the past 20 years, NGOs, PVOs, cooperatives, foundations, corporations, the higher education community, and even individuals, now provide development assistance. As a result, the U.S. Government is not the only, or perhaps even the largest, source of U.S. resources being applied to the development challenge.

In its formation of the Global Development Alliance, USAID has outlined its strong commitment to developing strategic alliances, which will leverage significant resources, expertise, creative approaches and new technologies to address issues of poverty, hunger, disease, illiteracy, environmental degradation, natural disasters, conflict and issues of population, democracy and governance. We recognize that effective partnerships will marry common interests and will require time and careful planning. To do this, USAID will capitalize on its extensive field presence and technical expertise to catalyze, integrate, coordinate, and facilitate public-private alliances among U.S. development assistance actors.

Clearly these alliances are critical to the development of ICTs. As seen in countries like Ireland and India, partnerships with the U.S. ICT sector – in such activities as policy reform, private sector development, and e-government – have been critical to the development of both a thriving ICT sector and to the development of innovative ICT development applications. This is especially clear in local private sector development, which can best be accomplished by developing alliances with other ICT players, particularly the U.S. ICT private sector. These linkages provide three types of benefits:

1. They provide “learn by doing” opportunities for local firms, which have an opportunity to work directly with more advanced colleagues;
2. They provide an opportunity for the U.S. ICT sector to expand into new markets;
3. They provide USAID with leverage, as it can partner with U.S. ICT players, and further its development assistance.

ANE is uniquely positioned to do this. Not only does the Bureau have a long and productive history of driving policy reform and working with governments and NGOs in the region, but it also has collaborated extensively with the private sector. USAID ANE can partner with U.S. leaders in Internet technologies and applications, and can draw upon world-class technical assistance and training experience, in order to apply the principles that have guided the tremendous growth of ICTs in the U.S.

Given that regional projects often compete for funding with bilateral activities, the ANE Bureau has prioritized its support for ICT development. The Bureau's role is three-fold:

- To help countries in the region improve the enabling environment for ICT development;
- To support the growth of the region's ICT private sector, by helping leverage partnerships with the U.S. ICT sector;

- To “plant the seeds” of ICT development, by supporting specific development “applications” and helping the missions improve their ICT development skills.

## 2. Overview

### A. Why ICT?

“The Internet will change everything. The Industrial Revolution brought together people with machines in factories, and the Internet revolution will bring together people with knowledge and information in virtual companies. And it will have every bit as much impact as the Industrial Revolution. It will promote globalization at an incredible pace. But instead of happening over a hundred years, like the Industrial Revolution, it will happen over seven years.”

John Chambers  
President of Cisco Systems

Information and Communication Technologies (ICTs) are transforming the way people live, learn and work. Domestically, ICTs account for one-third of the U.S. GDP growth helping to fuel our economy; in India, a new middle class is emerging based on a solid ICT industry, and throughout the ANE region, countries view ICTs as critical to their economic development. In addition to the economic benefits, there are social gains to be made by adopting ICTs. There are 1.5 billion websites with two million web sites being added each day. The web offers enormous potential for USAID partners through South-South, South-North, and North-South information sharing. There are over 300 million Internet users globally, growing at an estimated 35% per year. With such vast information resources available, nations that harness ICTs can look forward to expanded economic growth, improved human welfare, and stronger democratic governance.

ICTs are more than an enhanced means for achieving development objectives. ICTs can transform processes and institutions, often creating opportunities and linkages that were previously not possible or even imaginable a decade ago – in expanding basic education and life-long learning, enterprises and industry cluster development, increasing participation in government, furthering disease prevention and control, managing disaster assistance, and improving development cooperation.

Experience shows that ICT interventions can have significant positive spillover effects (for example women’s empowerment, democratization, transparency in governance) extending well beyond the original scope of the activity. The democratization of and access to information and its related applications are leading to a global information society with enhanced opportunities for human empowerment, capacity building and poverty alleviation. Enabling more widespread participation and empowerment in the global information society is an important development result in its own right.

There are challenges to ensuring that developing countries can share in the information and communication revolution. Fewer than 5% of computers connected to the Internet are in developing countries. Low-income countries have less than five telephones per hundred people resulting in only half of the world’s population having made a telephone call. Leaders of the Group of Eight (G8) industrialized countries at the Okinawa Summit in July 2000 addressed this “digital divide” between the rich and poor nations as part of the Okinawa Charter on the Global

Information Society. They established a Digital Opportunity Task (DOT) Force to mobilize resources of governments, the private sector, foundations, and multilateral and international institutions in order to bridge the international digital divide through the creation of “digital opportunities” for developing countries and their citizenry. Interventions include fostering an appropriate ICT regulatory environment; promoting expanded ICT access and related human capacity; and encouraging ICT applications that promote economic growth, education, health, environment and improved participation in government. USAID’s ANE Bureau is taking the lead across the ANE region for working with key partners in this endeavor such as the Government of Japan’s ICT task force.

### **Problem Statement**

Countries that lack the skills and the resources – “the brains and the bandwidth” - to participate in the Internet revolution will be left farther and farther behind as the digital divide between developed and developing countries continues to grow at an exponential rate. This divide between the “have” and the “have not” countries is a potential source of instability and conflict, as citizens in developing countries become aware of the resulting income gap between themselves and their peers around the world.

According to the International Telecommunication Union (1999), there are more Internet hosts in New York City than on the continent of Africa. Moreover, the number of PCs per 1,000 inhabitants is 156.3 compared to only 6.5 in developing countries (UNDP, 1999). As developed countries increasingly rely on using ICTs to advance their economies, it is critical for developing countries to narrow the digital divide by promoting progressive ICT policies, modernizing their telecommunication pipes, enabling their private sector, and investing in development applications.

Ninety-eight percent of the four billion additional people that will be born by the year 2020 will be in developing countries. Having access to Information and Communication Technology will be critical for these countries’ ability to generate economic opportunities for their citizens.

The digital divide does not merely apply on a country-by-country basis, as gender divisions in ICT use and labor patters are already emerging. For example, women comprise 22% of all Internet users in Asia and tend to be concentrated in lower skilled ICT jobs related to word processing or data entry. It is essential that gender issues in ICT be considered early in the process of the introduction of ICT in developing countries so that gender concerns can be incorporated from the beginning and not as a corrective afterwards.

For USAID, ICTs are simply the marriage between improved access to greater amounts of information and the sharing of information through affordable, reliable, and rapid communication mechanisms. As such, ICTs are enabling tools to work towards the resolution of problems in the areas of conflict management, agricultural, population health and nutrition, economic growth, education, gender, and the environment.

### **B. Why USAID?**

Because of its experience, expertise and contacts, USAID has taken a lead role in developing and implementing ICT initiatives. To date, USAID has primarily used ICT as a platform for promoting a range of development agendas. Activities have included using the Internet to

expand educational opportunities and to spread information among medical professionals about breakthroughs in treatment or prevention. USAID has also promoted the growth of the ICT sector itself, as an engine for economic development. This is done by strengthening the role of the government and NGOs, while promoting the growth of private sector, to ensure that the key planks in an ICT growth strategy are in place.

USAID is uniquely positioned to do this. Not only does the Agency have a long and productive history of driving policy reform and working with governments and NGOs in the region, but it also has collaborated extensively with the private sector. Private sector strengthening will be the critical for long-term sustainability of ICT development. USAID also has extensive experience in collaborating with other donors, as it was the first major donor with ICT programs.

And perhaps most importantly, USAID can partner with U.S. leaders in Internet technologies and applications, and can draw upon world-class technical assistance and training experience, in order to apply the principles that have guided the tremendous growth of ICTs in the U.S. Leveraging these partnerships is a key plank in USAID's Global Development Alliance (GDA).

The GDA will be a fundamental reorientation in how USAID sees itself in the context of international development assistance, in how we relate to our traditional partners, and in how we seek out alliances with new partners. USAID will use its resources and expertise to assist strategic partners in their investment decisions and will stimulate new investments by bringing new actors and ideas to the overseas development arena. USAID will bring its unique development mandate within the U.S. Government--a critical role within the foreign affairs community headed by the Secretary of State--and long-term experience with, and access to, host-country governments. Further, USAID can capitalize on its extensive field presence and technical expertise to catalyze, integrate, coordinate, and facilitate public-private alliances among U.S. development assistance actors. Clearly the ICT arena is one area that can benefit greatly from these types of alliances.

### **C. Why the ANE Bureau and Regional ICT Programs?**

As outlined in Appendix A, many of USAID's bureaus have developed regional framework for ICT growth. Given the cross-border nature of information communication technologies development, perhaps this is natural. The emergence of new ICTs suddenly makes it possible - and increasingly inexpensive - to move capital, labor, knowledge and ideas across national borders. Further, the explosion of globalization means that competition now comes from anywhere and everywhere. In this environment, the ability to learn, assimilate, adapt and innovate becomes paramount. Development opportunities come to countries and regions that build both "the brains and the bandwidth" to seize the opportunities created by ICT and globalization.

USAID's ANE missions have begun to recognize this. They have been requesting support for a range of bilateral ICT initiatives in policy development and private sector strengthening. The ANE Bureau can develop a more holistic approach to supporting the region's ICT development by designing a regional framework that has both strategic and operational benefits.<sup>46</sup> Strategically, the Bureau's support should provide guidance on proposed priorities in terms of ICT development; operationally, it better supports technology transfer in the region.

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<sup>46</sup> As noted in the SARI Component Two Report.

Given that regional projects often compete for funding with bilateral activities, the ANE Bureau must prioritize its support for ICT development. The Bureau's role is three-fold:

- To help all the countries in the region improve the enabling environment for ICT development;
- To support the growth of the region's ICT private sector, by helping leverage partnerships with the U.S. ICT sector;
- To "plant the seeds" of ICT development, by supporting specific development "applications" and helping the missions improve their ICT development skills.

Any project developed by the Bureau must demonstrate why a regional effort is more appropriate than a bilateral one. In designing regional projects, at least one of the following should be true.

1. **The regional project can provide more "bang for the buck" than a bilateral project would.** Many of the countries in the region would benefit from a whole range of ICT development activities; however, given both multiple demands on limited funds, as well as the sometime smaller scale of bilateral assistance necessary, many missions can expand ICT development through cross-border support that promotes operating efficiencies. Examples would include the training of telecoms regulators from a sub-region (ANE has already supported such an activity). Other issues are more transnational in nature, and can be best addressed with more coordinated action. These include such activities as a sub-regional ICT cluster competitiveness initiative and/or development of industry standards.

In terms of GDA activities, a regional bureau may have more clout in dealing with the U.S. ICT sector. The ANE Bureau is in a better position than the bilaterals to negotiate partnerships with U.S. ICT firms, as it can demonstrate greater economies of scale and greater programmatic impact.

2. **The Bureau is better suited to undertake experimental programs, which could serve as pilot projects for the region.** In other cases, the Bureau's involvement is required to promote pilot activities. This need can be a result of the Bureau's willingness to take risks and support more experimental programming; or it can be the result of a mission's lack of funding forcing it to make the difficult choice to forego ICT activity in favor of other priorities. Further, many missions do not currently have Strategic Objectives (SOs) that relate to ICT development. The Bureau provides an ADS umbrella for ICT activities, so that individual missions do not have to amend their strategies,

As a regional bureau, ANE can find and promote the model activities that promote regional technology transfer. ANE countries may later develop their own bilateral activities as a result of the experimental program undertaken by the Bureau.

3. **The Bureau can best serve as a center of expertise and excellence, in supporting the efforts of the missions in the region.** Many ANE missions find they lack ICT management capacity and the ICT expertise to design and implement ICT programs. USAID/Leland Initiative found this was a major constraint in Africa, one that was solved through the hiring of local Mission ICT coordinators; in ANE, individual Mission ICT coordinators are certainly not possible in every country. Instead, the Bureau can serve

that role, by coalescing ICT information, experience and expertise, and reducing operational costs on a country-by-country basis.

Further, the Bureau can provide specific technical expertise that missions may not have. By developing a ICT specialist “roster,” the Bureau can ensure that missions have the know-how they need to implement ICT activities.

## 2. Strategic Framework and Objectives

### A. Goal and Objectives

The principal objective of the ICT initiative is:

To foster increased growth and development in ANE countries by strengthening the enabling environment for ICT development and application. This can be achieved by promoting progressive ICT policies and encouraging private sector growth and development applications.

As described above, ICT development environment is large and difficult to get your arms around. USAID ANE needs to focus its limited resources on those areas where it can have the biggest impact. Primarily, USAID should determine where its comparative advantages are. These include areas where USAID has experience and has often taken the lead in the ANE region:

- Policy development;
- Private sector development; and
- People & application activities.

Although development of the ICT infrastructure (the “pipes”) is an important factor in ICT development, it may be better left to USAID partners with the resources and structures to support these types of activities. And as noted above, the Bureau should only be involved in developing projects where there is a comparative advantage to a regional effort over a bilateral one.

ANE’s regional ICT activity will be developed as part of the Bureau’s Economic Growth Strategic Objective (SO): *498-023 - Encourage Economic Growth*.<sup>47</sup> To broaden Internet access and increase the flow of free information throughout the region, the ICT initiative will be included as the EG SO’s fourth IR.<sup>48</sup>

#### **IR 23.4 Expand ICT Development through Cross-Border Cooperation on Policy Strengthening and Private Sector Development.**

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<sup>47</sup> Formerly titled “Encouraging Economic Growth in Asia and the Near East”

<sup>48</sup> The other IRs under the EG SO are: IR 23.1 (498-001), Accelerating Economic Recovery in Asia (AERA); IR 23.2 (498-003), North Africa Regional Trade and Investment Initiative; and IR 23.3 (498-031), South Asia Regional Initiative/Energy Program (SARI/Energy)

#### **23.4.1 – Improved Policies, Laws and Regulations Modified**

The government's primary role in terms of fostering ICT development in its country is to create a legal and regulatory environment that encourages private investment. It should promote policy reform to permit the introduction and growth of information and communication technologies, reducing barriers to open connectivity, and ensuring that global electronic commerce can take place in an open and transparent fashion.

Illustrative projects could include:

- Improving the legal framework for ICT development, promulgating Internet laws and intellectual property regulation, and strengthening of those institutions that will support the development and implementation of those laws.
- Reducing Internet tariffs regionally, to more closely aligned with cost-based accounting.
- Strengthening telecommunications regulation and enforcement, using the World Trade Organization's Basic Telecommunications Agreement.

#### **23.4.2 – Enhanced Capabilities of the Private Sector**

Supporting the development of a strong private sector in the region will ensure economic growth activities, and can be the base for helping spread ICT application. Further, private sector development can best be accomplished by developing alliances with other ICT players, particularly the US ICT private sector. These linkages provide three types of benefits:

- They provide "learn by doing" opportunities for local firms, which have an opportunity to work directly with more advanced colleagues;
- They provide an opportunity for the US ICT sector to expand into new markets;
- They provide USAID with leverage, as it can partner with US ICT players, and further its development assistance.

Illustrative projects could include:

- Developing high-technology parks.
- Supporting a regional export promotion program for software developers.
- Promoting Workforce Development activities focused on ICT cluster development, including linking educational activities to private sector demands including equal opportunities for both genders.
- Increasing competition in the Internet Service Provider industry, to improve the range of services offered.

#### **23.4.3 – People & Application Activities**

In addition to specific ICT sector development activities, the Bureau has an opportunity to support the development of ICTs as a platform for development. In other words, ANE can help develop cross SO activities that use the Internet (and other ICTs) to deliver better, wider, and/or more relevant services to the Agencies targeted constituencies. For instance, the Africa Bureau has [AfricaLink](#), a USAID initiative to facilitate access to the Internet for its colleagues and partners in Africa in the agricultural, environmental, and natural resource

management sectors. This program has used the Internet to greatly enhance service delivery.

Illustrative projects could include:

- Developing community portals for specialists working in health care and higher education;
- Supporting E-Government activities;
- Creating a “virtual mentoring” program, which links local NGO and government officials with mentors in the U.S. through the Internet;
- Developing and implementing web-based monitoring and evaluation tools;
- Providing start-up funds for specific development application; these start-up funds could be provided by a combination of private support and government.

## **B. Prioritizing Activities**

Even with this narrowing of the universe of potential projects, prioritization will be critical to success. As a rule, activities will be concentrated in DA funded countries, although heavily funded ESF countries could buy into activities, training, and other forms of support. Within the three sub-IRs, policy, private sector, and people & applications, the former two areas will have highest priority. Willingness of a mission to hire an in-country ICT advisor will be viewed positively, as will complementarity with ICT programs being implemented by other donors, NGOs, or the private sector. Finally, for each sub-IR, criteria will be set for prioritizing activities and could include the following:

- For policy development activities, ANE will focus on countries with either a good current enabling environment for ICT or, at a minimum, a demonstrated desire to improve the environment.
- For private sector development activities, priority will be given to countries or sub-regions with favorable macroeconomic and ICT policy environments.
- For ICT people & application activities, priority will be given to countries or sub-regions where these activities directly complement or reinforce bilateral program activities.
- Except for extenuating political circumstances, resources will be concentrated in countries with USAID DH or USPSC staff.

## **C. Critical Success Factors**

Several factors must be in place if the ANE Bureau is to achieve success. These would include:

- USAID bi-lateral Missions will contribute resources to ICT programs.
- USAID bi-lateral Missions would like assistance, ranging from management, design, and implementation of activities.
- The ANE Bureau will continue to support the Internet Development Advisor position.

- USAID bi-lateral Missions should move towards having in-country ICT coordinators to ensure better technology transfer.
- The private sector – in the U.S. and in the Region – fully participate in and supports partnerships.

### 3. Complementarily with Other Programs

A well-designed regional ICT program would complement existing mission activities and other donor programs (e.g., foundations, multilateral donors, USG agencies), rather than compete with them. ANE will focus on areas that give USAID and ANE a comparative advantage and compliment existing activities, such as in policy reform and private sector development. In this way, the regional ICT program will help maximize the developmental impact of non-ICT activities in mission portfolios, leverage resources and expertise from the private sector/foundations/universities, and reduce duplication of donor efforts. Specifically, the program would complement organizational activities as follows:

- *USAID Missions:* ANE will integrate ICT into the existing portfolio of activities to create efficiencies for greater developmental impact (e.g., integrating technology into agricultural activities to improve farmers' access to market information).
- *Private sector, foundations, and universities:* ANE will promote private sector activities that help leverage resources and capture specialized expertise.
- *Other Donors:* Donor coordination to work in areas of comparative advantage would reduce duplication of efforts. USAID would focus on policy reform and private sector development activities that complement World Bank and ADB efforts in ICT infrastructure.

Further, USAID has extensive experience in implementing regional ICT initiatives throughout the world, through its Bureaus. The Africa and E&E Bureaus both allocate centralized resources for regional application. The Africa Bureau focused on Policies, Pipes, and People and has the Private Sector as a cross-cutting theme. The E&E Bureau also has cross-cutting themes focusing on Policy and Private Sector. The Global Bureau has a Policy focus, HCD, and People/Applications focus. The LAC Bureau has yet to start a regional program, but will have an ICT advisor in the near future. The Bureaus and field Missions share information through an "I-Team," which meets electronically and in-person.

## **A. ANE Missions**

Because of the strong demand throughout the ANE region, a number of field Missions have already initiated a number of ICT-related activities. An illustrative list includes:

- Policy and regulatory assistance such as through e-commerce demonstrations and legislation assistance, independent regulatory strengthening, and telecom policy workshops;
- Private sector support through technical training to Internet Service Providers, and assistance to technical associations such as Internet societies, as well as through competitiveness initiatives focused on the ICT sector; and
- People & Applications support by computerizing and 'Internetizing' USAID supported NGOs, web page development, and training to use ICTs to enhance organizational and individual development.

Regional activities would seek to complement and build on the work already accomplished, in part by ensuring that the Bureau serves as a repository of information, and a center of excellence and expertise.

## **B. Other USG Agencies**

ANE Bureau has been working with the Department of State, Trade Development Agency and the Department of Commerce in Morocco, Tunisia, and Algeria through the United States North African Economic Partnership program. In Egypt and Bangladesh, ANE Bureau has collaborated with the DOC. In non-presence countries (including the afore mentioned Tunisia and Algeria), ANE is working with the DOS in Vietnam and Thailand.

## **C. Private Sector and Foundations**

Private sector corporations and foundations have been involved in ICT-related initiatives in developing countries. The deep pockets of corporations and the "know-how" and networks of independent foundations offer a potent combination with which to combine USAID expertise such as in the area of Human Capacity Development where private sector companies like CISCO and Oracle have established training academies. While many foundations have a domestic bias, international projects in ICT can be found. As might be expected, many of these foundations focus on "human interest" related activities, such as education, health, or disaster relief (e.g., IBM Community Relations and the Coca-Cola Foundation). Civil society is also a recurring theme (e.g., Soros Foundations Network and the Asia Foundation). While ICT is inherently cross-cutting, ANE's application of ICT to development primarily falls under economic growth (i.e., policy reform and private sector activities). As such, it might be fruitful to examine the foundations that focus on issues most relevant to current ANE ICT initiatives. Some examples of these foundations include the Markle Foundation, the Ford Foundation, the Rockefeller Foundation, and the Andrew W. Mellon Foundation.

## **D. Donor Collaboration**

Collaborations with bilateral and multilateral donors have been forged to collaborate on ICT initiatives. ANE is moving in this direction through continual discussion with the Government of Japan and the World Bank. Currently, USAID is working on a pilot tri-donor ICT coordination project in Indonesia and Nepal. The Government of Japan (GOJ) has announced a

comprehensive cooperation package of approximately \$15 billion over five years in order to bridge the global divide between the developed and developing countries; their focus is on the Asia region.

The World Bank has been involved in wide variety of ICT activities from rural telecommunications to e-commerce and e-government. It focuses on reducing digital disparities and unequal access. Its mission is to (1) accelerate the participation of client countries in the global information economy, (2) to promote private sector investment in developing countries to reduce poverty and improve people's lives, and (3) to promote innovative projects on the use of ICT for economic and social development with an emphasis on the needs of the poor.

#### **4. Management, Program Implementation, Budget, & Performance Monitoring & Evaluation**

##### **A. Management**

Given its proposed role as a center of excellence and expertise, the Bureau should continue to fund the Program Coordinator position to coordinate ICT activities across the ANE region. The Coordinator's role would be:

1. To manage the central office for ANE ICT activities and serve as the central liaison between core USAID staff working on ICT and all other mission partners.
2. To develop strategic alliances, which will leverage significant resources, expertise, creative approaches and new technologies to address a range of development issues (including gender, poverty, hunger, disease, illiteracy, environmental degradation, natural disasters, conflict and issues of population, democracy and governance).
3. To provide technical assistance to the ANE Bureau, field missions and selected development partners on opportunities, and project formation, structure and implementation.
4. To manage strategies of outreach, technical assistance and advocacy for the Bureau.
5. To recruit and manage technical specialists to support ICT activities.

The Coordinator would be supported by a pool of technical specialists and firms, which would be called on to assist with program design and implementation through existing contract vehicles including Dot.Com, IRM, and SEGIR. These specialists would have expertise in:

- Policy development;
- Private sector development;
- People & Applications development.

Further, it is recommended that missions hire ICT coordinators if feasible; many Missions have done so or are in the process of doing so.

##### **B. Performance Monitoring and Evaluation**

The first performance report for the ICT initiative will be prepared and reviewed in calendar year 2001 so that its resource request applies to the FY 2002 budget. The missions and ANE/Washington will work together to prepare a performance-monitoring plan within six months of approval of this special objective, complete with performance indicators, baselines and targets for each year of the strategy period. The Performance Monitoring Plan will specify sources of indicator data and collection methodologies. The actual schedule and mechanisms of data collection will be worked out by the missions and by ANE/Washington.

**Measures of Success for ICT Development Activities could include:**

- Improved Telecommunications Policies enacted and enforced;
- Intellectual Property Law enacted and enforced;
- Cybercrime legislation enacted and enforced;
- E-Commerce-supportive legislation enacted and enforced;
- Private sector friendly legislation enacted and enforced;
- Reduced Internet tariff rates that are more closely align with cost-based accounting principles.
- A robust ICT private sector;
- Widespread competition in the Internet Service Provider industry;
- Increased numbers of qualified ICT graduates entering the local workforce;
- Up-to-date ICT curriculum being offered in public and private sector institutions.
- Demonstrated partnerships between the U.S. and the regional ICT sectors;
- Increased access to affordable communications and reliable information for USAID NGO and Governmental partners.

**Annex B: Project Country Activities at a Glance**

COUNTRIES	ASSESSMENT	POLICIES	PRIVATE SECTOR	PEOPLE & APPLICATIONS
Algeria	Jan '01	]	]	
Bangladesh	Sept '00	]	]	]
Cambodia	Spring '01			]
Egypt	Aug '00	]	]	]
Gaza/WBank	Aug '00	]	]	]
India	March '00	]	]	]
Indonesia	Jan '01	]	]	]
Jordan	Sept '99	]	]	]
Lebanon	March '01		]	]
Mongolia	July '00		]	
Morocco	Sept '99	]	]	]
Nepal	April '01	]	]	]
Philippines	Dec '00	]	]	]
Sri Lanka	Dec '99	]	]	
Thailand	Nov '01		]	]
Tunisia	Oct '00		]	
Vietnam	Sept '01		]	]

] = Proposed/ Planning Stage

] = Engaged in

# Vietnam: ICT Assessment

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## Appendix D – e-Readiness Surveys

With the increased international focus on ICTs in recent years, a growing number of ICT survey and assessment tools have been developed to measure “E-Readiness,” that is, the capacity of nations to participate in the digital economy. E-Readiness is understood to be the source of national economic growth in the networked century and the prerequisite for successful e-business. The various approaches undertaken by different organizations are best documented by Bridges.org, a non-profit organization, and include five.<sup>49</sup> such ICT-related surveys for Vietnam. All five of these are “statistically or questionnaire-based,” whereas this ICT Assessment undertaken for USAID is the only “case study” assessment undertaken for Vietnam. These five surveys are as follows:

- CIDIF – Centre International pour le Development de l’Inforoute en Francais<sup>50</sup>
- EIU – The Economist Intelligence Unit (E-Business Readiness)<sup>51</sup>
- KAM – World Bank, Knowledge Assessment Matrix<sup>52</sup>
- MI – McConnell International and the World Information Technology Services Assistance (WITSA)<sup>53</sup>
- MQ – The Mosaic Group<sup>54</sup>

Several of these underscore Vietnam’s rank as one of the lowest in the region and the least equipped to prosper in the networked economy. The following provide an overview of several surveys and rankings for Vietnam from these surveys.) The following provides a brief summary of the EIU, KAM, and MI surveys relating specifically to Vietnam. In addition, a preliminary effort has been made to assess Vietnam’s e-readiness based on a Readiness Guide for a Networked World developed by the Information Technology Group (ITG) at the Center for International Development (CID) at Harvard University<sup>55</sup>.

**EIU – The Economist Intelligent Unit (E-Business Readiness)**—The EIU’s e-business readiness rankings were issued in May of 2000. The e-business-readiness ranking are a guide to the relative preparedness of the world’s main markets for the e-business era. Countries at the top of the league stand to reap the benefits from the new networked economy, while those at the bottom will struggle to compete in the digital age. Companies looking to realize the global promise of the Internet and enter far-flung markets can judge from a country’s position in the rankings how easy that move is likely to be.

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<sup>49</sup> <http://www.bridges.org>

<sup>50</sup> <http://www.cidif.org/diffusion>

<sup>51</sup> <http://www.ebusinessforum.com>

<sup>52</sup> <http://www1.worldbank.org/gdln/kam.htm>

<sup>53</sup> <http://www.mcconnellinternational.com>

<sup>54</sup> <http://www.som.csudh.edu/fac/lpress/gdiff/>

<sup>55</sup> <http://www.readinessguide.org>

In assessing e-business readiness country by country, the EIU weights two factors: the general business environment and “connectivity.” In evaluating the *general business environment* in any of the 60 countries, the EIU screens 70 different indicators covering criteria such as the strength of the economy, the outlook for political stability, the regulatory climate, taxation policies, and openness to trade and investment. The resulting “business environment rankings” measure the expected attractiveness of the general business environment over the next five years.

In the digital age, the state of the communications infrastructure is also vitally important. Without adequate Internet access, e-business simply cannot happen. So *connectivity* is factored into the rankings, drawing on a methodology devised by Pyramid Research, the EIU’s communications division. Pyramid’s assessment takes into account not only the state of the existing telephone network but also other factors that affect Internet access, such as dial-up costs, literacy rates, and education.

A country’s average score across the two measures yields its e-business-readiness tally. EIU’s position is that the resulting rankings offer the best proxy now available to judge a country’s relative preparedness for the Internet era.

EIU has published rankings in May of 2000, and more recently in May of 2001. Vietnam ranked 58 out of a total of 60 countries in the May 2001 survey. Their total E-business readiness score of 2.76. Only the countries of Azerbaijan and Pakistan were rated lower than Vietnam in the more recent survey (again, recognizing that only 60 countries in the world are included in the EIU survey). In fact most developing countries are not included in EIU’s survey. However, for comparison/context purposes it is of value to compare Vietnam to the rankings of other Southeast-Asia countries in the May 2001 survey data:

- Singapore was rated number 7 with a E-business readiness score of 7.87;
- Hong Kong was ranked number 13 with a E-business readiness score of 7.45;
- Taiwan was tied for number 1 with a E-business readiness score of 7.22;
- Japan was rated number 18 with a E-business readiness score of 7.18;
- Malaysia was ranked number 33 with a E-business readiness score of 4.83;
- Philippines was ranked number 39 with a E-business readiness score of 3.98;
- Sri Lanka was ranked number 43 with a E-business readiness score of 3.82;
- India was ranked number 45 with a E-business readiness score of 3.79;
- Thailand was ranked number 28 with a E-business readiness score of 3.75;
- China was ranked number 49 with a E-business readiness score of 3.36;
- Indonesia was tied for number 54 with a E-business readiness score of 3.16; and
- ***Vietnam was ranked number 58 with a E-business readiness score of 2.76***

The May 2001 numbers are considerably different than those of the earlier May 2000 survey, and do not have the breakout for Business Environment and Connectivity, but only the combined score. In the May 2001 survey, Vietnam was considered by EIU as one of 13 countries in their “E-business laggard” category. “For the May 2001 numbers, the published EIU data reflects the breakdown as follows: Vietnam’s “Business

Environment” ranking in the May was placed at 5.30<sup>56</sup>, and its “Connectivity Rating” was placed at 3<sup>57</sup>. These combined scores yielded a “E-Business Readiness Ranking” number of 4.2<sup>58</sup>. But again, for May 2001, Vietnam’s combined score, and ranking of the 60 countries dropped considerably as reflected in the above data. For more detailed information refer to the EIU website.

**KAM – World Bank, Knowledge Assessment Matrix**—The World Bank’s Knowledge Assessment Matrix allows the user to interactively graph (using a radar chart) a large number of variables for virtually all of the world’s countries/economies. In addition it lets the user compare one country to another. The database contains over 60 variables that are grouped into 5 categories. These variables are grouped into: Performance, Economic Regime, Innovative Systems, Education, and ICT.

While many of these 60+ variables are important to assess a country’s e-readiness, there are 13 variables reflected in the database under the ICT category. These include: 1) telephones per 1,000 people (mainline & mobile), 2) telephones per 1,000 people, 3) mobile phones per 1,000 people, 4) computers per 1,000 persons, 5) TV sets per 1,000 people, 6) radios per 1,000 people, 7) daily newspapers per 1,000 people, 8) investment in telecom (% of GDP), 9) rating of computer processing power as % of total worldwide MIPS, 10) Internet hosts per 10,000 people, 11) international telecommunications (cost of call to U.S. per 3 minutes), 12) Information Society Index, and 13) E-commerce.

The Interactive capability of this website (see earlier reference) takes hard indexed data and graphs each variable (you can choose those you want graphed), and normalizes them on a relative scale of 0-10; 0 being low and 10 being the highest possible.

Due to the large number of variables and the somewhat complexity of the data (though the system is very easy to use), it is difficult to capture and effectively communicate the ultimate outcome of data contained in this system relative to Vietnam. This is in large part due to the extensive details that are incorporated into the development of each variable contained in the Knowledge Base (footnoted via hyperlinks in the system).

Those needing to focus on a specific element and seeking more detailed analysis are encouraged to visit the WB’s Knowledge Base.

**MI – McConnell International**—For the past several years, McConnell International has undertaken annual surveys of a growing number of world economies with regards to their E-Readiness. In August 2000, McConnell International issued their first E-Readiness Report.<sup>59</sup> This report assessed the current e-readiness of 42 critical national economies including Vietnam. The report provides an independent public assessment of

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<sup>56</sup> Score is out of 10: more than 8 = very good; 6.5 - 8 = good; 5.5 – 6.4 = moderate; 5 – 5.4 = poor; and less than 5 = very poor.

<sup>57</sup> From Pyramid Research, out of 10.

<sup>58</sup> Average of business-environment rating and connectivity rating, out of 10.

<sup>59</sup> <http://www.mcconnellinternational.com>.

one of the most important economic question of the early 21st century: “Who is poised to prosper in the networked economy.”

“E-readiness” measures the capacity of nations to participate in the digital economy. E-readiness is the source of national economic growth in the networked century and the prerequisite for successful e-business.

The report looks at 5 E-Readiness attributes:

- **Connectivity** – Are networks easy and affordable to access and to use?
- **E-Leadership** – Is e-readiness a national priority?
- **Information Security** – Can the processing and storage of networked information be trusted?
- **Human Capital** – Are the right people available to support e-business and to build a knowledge-based society?
- **E-Business Climate** – How easy is it to do e-business today?

The E-Readiness Report uses a red, amber, and blue rating system for assessing countries in each of these five areas:

- **Blue** – indicates the majority of conditions are suitable to the conduct of e-business and e-government
- **Amber** – indicates improvement needed in the conditions necessary to support e-business and e-government
- **Red** – indicates substantial improvement needed in the conditions necessary to support e-businesses and e-government

Vietnam was one of the 42 countries/economies included in the August 2000 survey. In this survey, *Vietnam was rated as Red in all five categories*. The report also provides ratings for nine other Asia/Pacific countries including: China, India, Indonesia, Malaysia, Pakistan, Philippines, South Korea, Taiwan, and Thailand. For comparison purposes, all countries with the exceptions of Indonesia and Pakistan, were rated higher than Vietnam. For more detailed information refer to the referenced website.

Those seeking more detailed information on the McConnell International survey approach should refer to their Risk E-Business: Seizing the Opportunity of Global E-Readiness report dated August 2000, on their referenced website.

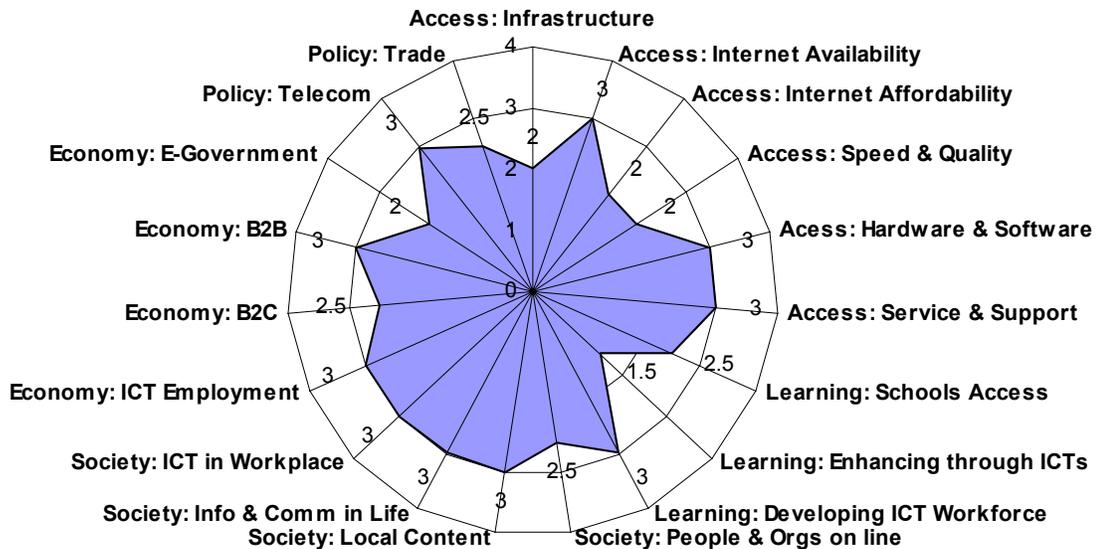
**Harvard’s Network Readiness Guide**—The Information Technologies Group (ITG) within Harvard’s Center for International Development (CID) has developed a comprehensive ITG Readiness Guide for undertaking self-assessments at a regional, country, or sub-country level.

The Guidelines establish a structured approach for examining a wide-array of variables to determine the overall readiness the field of study. This uses a break down as follows:

- **Network Access**—including Information Infrastructure, Internet Availability, Internet Affordability, Network Speed and Quality, Hardware and Software, and Service and Support;
- **Networked Learning**—including Schools Access to ICTs, Enhancing Education with ICTs, and Developing and ICT Workforce;
- **Networked Society**—including People and Organizations Online, Locally Relevant Content, ICTs in Everyday Life, and ICTs in the Workplace;
- **Networked Economy**—including ICT Employment Opportunities, Business-to-Consumer (B2C) E-commerce, Business-to-Business (B2B) E-commerce, and E-Government; and
- **Network Policy**—including Telecommunications Regulation and ICT Trade Policy.

A Detailed explanation of each variable is reflected in more detail following this simple diagram..

**Networked Readiness: Vietnam**



## Harvard's Readiness for the Networked World: A Guide for Developing Countries

The Information Technologies Group (ITG) at the Center for International Development at Harvard University<sup>60</sup> has not as yet evaluated individual countries, but instead has created a "Readiness for the Networked World: A Guide for Developing Countries." As stated in the Guide, *"This Guide is an instrument that systematically organizes the assessment of numerous factors that determine the Networked Readiness of a community in the developing world."*

### Harvard's Readiness Guide: Groups and Categories Descriptions

#### Network Access

What are the availability, cost, and quality of ICT networks, services, and equipment?

The minimum necessary condition for readiness is access to adequate network infrastructure. Without access to global communications networks, no community can participate in the networked world. Access is determined by a combination of the availability and affordability of use of the network itself, as well as of the hardware and software needed for network interface. The quality and speed of the network are also important in determining how the network is used. The customer service orientation of access providers is a major factor in network application adoption and usability.

Because of the growing importance and unique character of the Internet, which provides a global platform for both data and (increasingly) voice services, the assessment of network access should be carried out in the context of Internet access, rather than access to either voice or data. The significance of the Internet will only continue to grow in terms of global trade and communications.

- **Information Infrastructure**—For most communities in the developing world, a lack of access to voice and data services remains a significant impediment to Networked Readiness. Communications infrastructure is deployed with widely varying local and regional rates of penetration, depending on factors such as geography and/or income levels. Local network access may be provided by any one of a number of media that makes up the communications network (including twisted pair copper wires, coaxial cable, wireless local loop, satellite, and fiber optics). While in the future, mobile wireless technologies will undoubtedly provide an attractive option for data access, as will cable networks and perhaps even the electrical grid, currently most Internet access in the developing world is provided through the traditional telecommunications network.
- **Internet Availability**—Internet access is enhanced by competition among Internet Service Providers (ISPs) that operate locally. The range of services offered, number of

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<sup>60</sup> <http://www.readinessguide.org>.

dial-up lines (which helps determine ISP capacity) and transmission capacity all influence an ISP's usefulness. The availability of leased lines is particularly important in making the Internet available to the business community. Finally, in many communities in the developing world, public access is essential to making the Internet available to greater numbers of individuals and firms. Telecenters, Internet cafes, and community information centers assume great importance in making the Internet available to those who do not have personal access to home, school, work, or elsewhere.

- **Internet Affordability**—The prices, which businesses and individual consumers pay for the Internet access, are in most cases determined by a combination of fees for basic telephony and ISP services. In communities where the sum of ISP and telephony fees is prohibitively high, a disincentive to network usage exists, and access is curtailed. Pricing packages can be structured in ways that are conducive to Internet use—per minute or hourly pricing (unlike flat rate pricing) for both Internet and telephone service can limit users' time online and therefore inhibit the use of the network for many activities such as electronic commerce (e-commerce). The provision of tiered pricing packages can improve the affordability for many subscribers by allowing them to purchase only what they need.
- **Network Speed and Quality**—The available bandwidth, both for individuals' local access and for a community's connection to the Internet backbone, determines the number of users and types of online activities the network can support. Bandwidth-intensive activities, such as large file transfers or video streaming, may be unavailable to communities with constrained access to the network. The quality of the network, including servers, also determines its usage. High numbers of mainline faults, poor connections, dropped connections, and packet loss can render any network useless or operationally sub-optimal, thus discouraging use of and investment in new technologies.
- **Hardware and Software**—A vibrant market with numerous hardware and software options can encourage more specialized usage of the network, including ICT solutions that are tailored to local needs. More widespread retail and wholesale distribution channels for both hardware and software increases opportunities to use the network within the community. The prices of hardware and software are particularly important in the developing country context, where generally low-income levels cannot support high-priced consumer items.
- **Service and Support**—A strong customer service orientation is important in determining the success of network deployment. Long waiting periods for installation and repair and a lack of support services by telephone companies and Internet providers pose major obstacles to Readiness. The quality and number of technical support professionals are essential in maintaining the network and providing service.

## Networked Learning

Does the educational system integrate ICTs into its processes to improve learning? Are there technical training programs in the community that can train and prepare an ICT workforce?

Without an educated, ICT-savvy populace, no community can fully participate in the networked world. To foster this resource, ICTs must be incorporated into the learning system. Lamentably, although the use of ICTs in education is one of the most powerful catalysts to

networked readiness, it is an opportunity that is often squandered, misunderstood, or underestimated.

- **Schools Access to ICTs**—Schools must integrate ICT tools into their learning processes if they are to be part of the networked world. Programs that give students access to ICTs in the classroom provide an important step to improving readiness. A school's Readiness in terms of access can be broken down into six broad areas: number of computers, physical access to the technology, types of computers, diffusion of the network, access to and organization of electronic content, and quality and speed of connectivity in the school. In general, the diffusion of ICTs is driven by unit cost per pupil. Computers tend to be adopted first at the university level, then by the secondary school system, and finally by the primary schools.
- **Enhancing Education with ICTs**—While putting ICTs into schools is an important first step to readiness, the technologies need to be properly harnessed to improve the learning process. Teachers must be trained to use the Internet and computers as tools for the students' benefit; this training is central to readiness. Curricula must be redesigned to encourage the use of ICTs in the pursuit of problem solving, group learning, and research. Students should be taught from the earliest age possible to use ICTs to enhance and improve their learning experiences. Full integration of ICTs into the learning process is optimal, and collaborative, project-based learning can make up a solid pedagogical strategy for ICT-enhanced education.
- **Developing and ICT Workforce**—It is essential that there exist opportunities within the community to offer future ICT workers both first-time and continuing training in essential skills such as software programming, hardware engineering and World Wide Web design. These opportunities are fundamental to creating a sustainable ICT industry and support the integration of ICTs into the local economy.

## Networked Society

To what extent are individuals using information and communications technologies at work and in their personal lives? Are there significant opportunities available for those with ICT skills?

Readiness depends upon the community's incorporation of ICTs into the fabric of its activities in order to maximize the gains of joining in the Networked World. In society-at-large, ICTs can have a profound effect upon people's professional and personal lives by providing easier access to information, more efficient ways to communicate, and powerful organizational tools. To understand how a community is using ICTs, it is important to assess not only how many members of the community have access to the technologies, but also how they are using them.

- **People and Organizations Online**—One of the hardest indicators to track is the actual number of online users. Particularly in the developing world, where multiple users share many electronic mail (e-mail) accounts and other online tools, there are few reliable indicators that accurately map how many people are online. The exponential growth in online usage also makes tracking current use difficult. This nevertheless an important

indicator. As more people access the Internet regularly, and networks of users grow, there is greater demand and opportunity for online interaction, as well as better meshing with the networked world at-large. As more organizations gain an online presence, it becomes more likely that the community will use ICTs to augment or carry out its activities and needs. One of the most important drivers of online growth is awareness—people must first know and understand what the Internet is in order to participate. Particular attention should be paid to the demographics of Internet users in the community. Particularly at lower stages in readiness, groups such as women, the physically disabled, and racial and ethnic minorities often do not participate in the online environment. A community is more ready when there are not large discrepancies in online presence among different groups.

- **Locally Relevant Content**—Community members find the Internet medium more useful and relevant to their own lives when online content reflects their own interests and needs. Locally relevant content is a major driver of growth of Internet usage. Interactions such as chat rooms, online interest groups, special interest software, bulletin boards, listservs, and Web sites all drive the community to use ICTs more widely in their lives. English language dominance on the Internet remains a serious impediment to the world's non-English speaking communities. While the preponderance of English is waning, and other world languages are gaining, most of the world does not speak a language that is strongly represented either in software or on the World Wide Web.
- **ICTs in Everyday Life**—Communities participate more directly in the networked world when information devices such as radios, faxes, televisions, telephones, pagers and computers are culturally accepted and widely incorporated into daily life. It is important to examine both the penetration of ICT devices into community and their applications. In communities where either income levels or the network infrastructure cannot support high levels of individual access, public shared facilities provide a needed alternative. Such venues may include telecenters, cyber cafés and community information centers. Strategies for drawing people in to use these facilities is essential.
- **ICTs in the Workplace**—The more that businesses and government offices are already using ICTs, the better prepared they are to participate in the global networked economy. In order to realize important efficiency gains from ICTs, businesses and governments need to not only make technologies available to their employees, but also effectively incorporate them into their core processes.

## Networked Economy

How are businesses and governments using information and communications technologies to interact with the public and with each other?

Businesses and governments that are able to effectively employ ICTs find more sophisticated and efficient ways to managing their external relationships and communications. This growing ICT usage helps form the critical mass of electronic transactions which supports a networked economy, both in terms of the network size and the demand for associated goods, services, labor, and policy reform.

- **ICT Employment Opportunities**—A thriving job market for ICT professionals provides added incentive for growth of ICT adoption, training programs and overall use of ICTs within the economy. The retention of technical workers becomes an important competitiveness issue for the community.
- **Business-to-Consumer (B2C) E-Commerce**—Online retail options enhance consumer choice and access to products. They also allow businesses to reduce costs associated with physical infrastructure and to augment their marketing outreach and public relations via a dynamic communications channel.
- **Business-to-Business (B2B) E-Commerce**—When businesses move their dealings with other businesses online, they can often communicate more easily at lower costs, hold smaller inventories, and process billings and payments more quickly, among other advantages. Moreover, networked businesses are likely to explore new business models, including dynamic business partnerships and radical market restructuring.
- **E-Government**—Governments can take advantage of ICTs to improve connections with their constituents, including using the Internet to post information online and to offer interactive services for the public. Governments can also lead by example and become a catalyst for the networked economy by investing in ICTs for their internal use, leading to more efficient operations and the creation of a local market for ICT equipment and services. Relationships with government contractors and procurement mechanisms can be streamlined by putting them online. ICTs can make government activities more transparent to citizens and other observers.

## Network Policy

To what extent does the policy environment promote to hinder the growth of ICT adoption and use?

Public policy can be help or a hindrance to the networked economy. The favorable climate that public policy can create for Internet use and e-commerce encourages communities, organizations, and individuals to invest in and use ICTs. Important aspects of networked readiness dealt with elsewhere in the guide (such as Internet availability and affordability, hardware and software availability and affordability, ICTs in school, and electronic commerce) are all influenced by public policy. For a community to become ready for the networked world, the appropriate policy-makers must realize the implications of their decisions upon ICT adoption and use.

- **Telecommunications Regulation**—Effective regulation should promote competition, ensure affordable pricing for consumers and maximize telecommunications access in the community. Liberalization within the telecommunications sector should establish a regulatory framework that encourages multiple carriers to operate competitively. As more operators enter and compete in the marketplace, service offerings become more accessible and affordable, are deployed more rapidly and reach higher levels of quality. At the same time, regulation should encourage universal access to telecommunications services.

- **ICT Trade Policy**—ICTs become more available and affordable when there are low barriers to trade, including tariffs on ICT equipment and software, and electronically ordered or delivered goods and services

# Vietnam: ICT Assessment

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## Appendix E – Telecom: Paths Towards Liberalization

One of the current dynamics in telecommunications is a broad-based movement on the part of countries to liberalize their telecommunications sector. Frequently the starting point is a wholly owned government monopoly—most often in the form of a combined Postal, Telegraph, and Telephone (PTT) Ministry. Within the PTT there is typically a Public Telecommunications Operator (PTO) that is responsible for day-to-day operations of all domestic and international, voice and data, telecommunications. In the most restrictive environments there is no private-sector engagement with the possible exception of some private networks for transnational firms with offices located in the country.

The above situation is most often characterized by a telecommunications structure that is frequently inadequate to support the nation's growing requirements. Typically there is inadequate investment to expand the infrastructure, poor quality of service, long waiting lines for basic telephony services, low teledensity (ratio of phones per population) operational inefficiencies and ineffectiveness, artificially-inflated long-distance and international rates, and subsidized local services.

As the importance of telecommunications has become increasingly recognized as being a critical component for supporting social and economic improvements, an increasing number of countries have embarked on programs to improve their current default conditions. This typically includes a series of orchestrated steps that progressively decreases the government's operational role, increases their direction/regulatory engagement, and increases the role of the private sector for operations.

Naturally each country's approach toward liberalizing their telecommunications sector is unique and based on their local political, economic, and technical realities. Typically this liberalization is undertaken in a series of steps—each building on prior actions, and each laying a foundation for subsequent initiatives. While the individual paths and sequence of activities vary considerably country-to-country, increasing the telecommunications coverage, lowering costs/prices, and securing private sector financing and participation, are increasingly commonly-shared characteristics.

The following represents a somewhat “idealized” approach for architecting a country's telecommunications liberalization activities. This is presented as a general sequencing of steps that can be considered near optimal, again recognizing that local conditions will ultimately dictate the sequence, aggressiveness, as well as the timeline ultimately undertaken by any country.

**Firm and Broad Political Commitment**—It is not uncommon for the PTO to have ardent national supporters for maintaining the status quo, especially by those that likely will lose some level of political power. In addition, there is frequently considerable lobbying support by the workers that may involve strong union support to protect the workers (at times too many workers). It's also likely that the PTO represents a certain focal point for generating local

“nationalism” that can be leveraged by the unions and those not wanting any change. It is critical that an initial step be establishing broad and unwavering political support for embarking on what will likely entail a multiyear set of interrelated actions that will at times require strong commitment to “stay the course.” These will ultimately bring about the changes associated with liberalizing the country’s telecommunications sector—moving it from a government monopoly to a competitive private-sector sector.

**New/Updated Telecommunications Law**—The first critical expression of this political commitment is the drafting, lobbying, and passage of a new or updated telecommunications law. This will ultimately become the cornerstone, the reference point for all subsequent actions and it is essential that this be well thought out, comprehensive, articulate, and with as few ambiguities as possible. Salient characteristics of this law should address the establishment, role, scope, authority, power, and independence of a telecommunications regulator. In addition, it should lay the foundation for developing more detailed and subsequent rulemaking, regulations, administrative procedures, dispute resolution authorities, etc. In addition, the law should establish the parameters for the future of the PTO and possibly the future stages for introducing competition into the sector. Care should be taken to use the Law to establish the framework and authorities, with limited implementing details such that a regulator does not need to secure changes or even implementation via subsequent legislation. Also, to the extent possible, the authorities granted to the regulator should be articulated such as to maximize the resolution of conflict via their internal processes—limiting the need for conflict resolution to escalate to the court system.

**Establishing an Independent Regulatory Function & Commission**—Using the new telecommunications law as a foundation, a new independent Regulatory Commission (RC) should be separated out of the PTT or created from scratch. Issues here will be the level of actual independence the RC has and who it reports to. Also, it is critically important to establish a performing organization and the actual commissioners with as minimal political compromise as possible. For many smaller countries, the telecommunications regulatory function/commission is typically melded into a single organization that handles other utilities such as water, electricity, and wastewater treatment. To the extent possible, this new entity should join with existing regional regulatory associates in an effort to promote some level of commonality and parity/normalization with neighboring countries. Also, the regulatory body most often becomes the official national representative on multilateral bodies such as the ITU, WTO, etc. Staffing the new regulator entity is also a critical component as there is the need for those with independence of the operations and the need for a wide-array of knowledge/skills to include legal, technical, engineering, management, and administration.

Establishing a strong regulator (along with subsequent rules and regulations) is an absolutely essential component for ultimately enticing private sector investments into the country—be it selling off all or part of the PTO, or selling licenses for mobile telephony or Internet. Investors must be assured early that the process is in place and transparent, that there is openness and fairness, that it is well managed and thought out. These elements are essential for ensuring that future investors will not be at risk. Time spent here in establishing a strong regulator along with an open and transparent process, will yield tremendous dividends when later new licenses are

issued for new entrants and the government-owned telecommunications are later sold to private investors (all or partial).

**Separating the Telecommunications Operations from Postal**—By definition, the typical PTT combines both postal and telecommunications into a single organization. One of the initial moves toward liberalization, besides setting up an independent regulator, is to organizationally separate out the PTO from the consolidated Ministry. Frequently, this is undertaken to “corporatize” the PTO whereby it has an orientation that begins to operate on a near-privatized mode even through it remains a government-owned and operated monopoly. It is an interim step towards creating a situation where it has more parity with a private operator—a valuable situation when later the incumbent’s operations are wholly or partially privatized. This separation is also be aimed at improving the operational efficiencies and effectiveness with regard to establishing a more business-like cost structure, managing investments, developing human capacity, etc.—elements that will add value of the operational entity such that when it is privatized (all or in part), a higher price can be realized.

**Introducing Multiple Private Mobile Wireless Operators**—Typically one of the key issues facing most developing countries is the lack of telephony access. It’s not uncommon for teledensity (number of phones per 100 inhabitants) to be in the range of 10-15:100, but at times can be as low as 1-10:100. Most developed countries are on the order of 50-70:100, not taking into account mobile wireless. Mobile wireless telephony frequently becomes a substitute for landlines and has a number of inherent advantages that include such characteristics as: a) more rapid build-out, b) lower cost of build-out, c) relatively simply interconnection, d) high demand, and e) excellent solution for low-density rural areas. Typically, the incumbent PTO is grand fathered with a mobile wireless license and in many cases they have already entered this market. Ideally at least one additional license will be granted, perhaps more—depending on the potential market. This is frequently the country’s initial experience with introducing multiple private-sector players into the local telecommunications market. It is an ideal first step due to the characteristics outlined early. In addition, even when only one new entrant is allowed into the local market (in addition to the incumbent) it places competitive pressures on the PTO as the speed of build-out can quickly erode the landline backlog (e.g., potential customers and thus income).

The key regulatory issues needing attention with the introduction of mobile wireless operators primarily revolve around interconnection-related issues such as location of interconnection points, performance of establishing interconnection, establishing related costs structures, tariff setting, and revenue sharing. Other key issues that are addressed include frequency allocations, technology standards (e.g., GSM, TDMA, CDMA, 3G), and dispute resolution procedures (they must be transparent, fair and fast). Considering the ultimate number of complexities associated with managing a telecommunications environment with multiple private players in the local market, this is a relatively small list of issues and comparatively simply (though perhaps not easy). There are also literally hundreds of models and examples to follow that allow for quick resolution—providing the foundation, as outlined earlier, has been established. Experience has shown that in many countries the number of phones put into service by these mobile wireless new entrants can quickly exceed the number of landlines serviced by the incumbent.

**Strengthening the Regulator**—With a new telecommunications law in place that makes provision for an independent regulator, there is the need to develop the new organization and the knowledge/skill levels of those hired into the new entity. This requires a comprehensive approach that must include a wide number of knowledge/skills as well as deriving this education and training from a variety of sources. Knowledge and skills are primarily needed in telecommunications-related legal, technical, and economics. Sources for acquiring the knowledge/skills are considerable and include such sources as university degree program in all three areas, and a wide-range of organizations supporting the telecommunications sector. A few of the potential sources for obtaining short-term and long-term support for telecommunications regulators are as follows:

- United States' Federal Communications Commission (FCC) for short-term, educational missions, and at times, some longer-term training. They are also in the process of developing on-line/CD-ROM based training
- United States Technology Transfer Institute (USTTI) is a non-profit organization supported by U.S. high tech companies with USAID support. Typically the courses are short (2-3 weeks) and are company/technology specific. USAID funds the travel, per diem and the firms fund the actual training.
- National Association of Regulatory Utility Commissioners (NARUC) is a US-based association of state Public Utility Commissions (PUCs) that have an international program and can be relied on for longer-term mentoring and on-the-ground support.
- International Telecommunications Union (ITU) located in Geneva, Switzerland is another source of published materials as well as seminars and workshops that support regulatory (as well as other topics) knowledge/skill building
- Regional regulatory organizations are also of value in exchanging information, experiences, approaches, etc., that have special value in harmonizing approaches between neighboring countries.
- Commercial consultants also provide specialized support in the area of telecommunications regulation. These exist in virtually every country and typically require multiple sources even here as the breadth of coverage is so large.

The key in relying on any of these sources is that there be very specifically targeted needs identified within the new regulatory organization and that a comprehensive plan be developed. Because developing this human capacity will take several years, ideally this should be linked directly with the priority of the issues needed to be addressed by the regulator (e.g., interconnection, tariff setting, cost-based pricing, national numbering, universal service/access policy and implementation, Internet, etc.). As mentioned earlier, this is one of the considerations in introducing new mobile wireless into a country with a new regulator as there are a limited number of variables needing to be addressed in order to move forward on a very critical piece—expanded telephony coverage.

One area within the regulator's purview that needs special attention is the need for establishing a high-quality spectrum management capability. With wireless technologies becoming so critical for obtaining rapid build-out of both telephony and data/Internet, the frequencies must be managed. Typically a Spectrum Management Authority (SMA) is put into place or strengthened—including new monitoring stations, databases, application review/licensing

procedures, knowledge and skill building. In that spectrum licensing can be a source of revenue, this is well worth additional focus.

**Developing Rules, Regulations, Administrative Processes**—Typically the telecommunications law provides but a framework, general direction, and requisite authorities. It is the skeleton upon which a lot of meat and flesh need to be hung. If one were to look at the ratio of law relative to rules, regulations, and supporting administrative procedures (e.g., vetting of new rules/regulation proposals, licensing, dispute resolutions), the ratio of text is likely to be 1:100 or most often much greater. There is a misconception that “de-regulation” actually means less regulation. In fact, the opposite is usually the case and the word is a misnomer. Under the default condition of a government owned and operated PTT there is typically no regulation to speak of. And with the introduction of the private sector and multiple players into the telecommunications sector, more, not less regulation is required! While the goal is certainly to have a more open, transparent, and competitive environment, in fact this must be a managed environment. The environment becomes more complex with more players and added services introduced into the country’s environment, and the rules, regulations, and administrative procedures are essential for establishing this order early, and maintaining it over time. It is not uncommon for the RA to gain transparency of their activities by developing a rich Internet website and keeping those interested in this topic well informed of their activities. This can even progress to the point of soliciting public comment on drafts and applying for telecommunications licensing (especially frequency-related licensing).

**Introducing Multiple Private Data/Internet Operators**—With the growing importance of the Internet this area is another service that frequently receives early attention with regard to opening up access and introducing private sector participation. In many ways it is a strong corollary to mobile wireless in that it is in high demand, adds significant value-added services into the country, and the complexity of the regulatory issues needing to be addressed are relatively simple. There are a several approaches that are used with regard to the extent to which the private sector becomes (or is allowed to become) engaged in this Internet arena. First: The typical default is that the PTT handles everything including the role of the Internet Service Provider (ISP) with no private sector engagement. Second: More typical is the situation where the PTT handles the international access (via landline, optical fiber, or satellite/VSATs) and resells Internet access to commercial private sector ISPs who invest in hardware and software in order to provide value-added services to a growing customer base. The PTT also leases the requisite lines to/from the ISPs and the Internet access as well as lines needed to support local customer access through the local phone distribution system. Third: A more ideal scenario is where the private sector is allowed (via supporting law and regulation) to obtain their own Internet access via whatever route is available (but typically via satellite/VSAT) rather than being beholden to the PTT. The ISP must still lease their lines from the PTT for customer access through the local phone system, but for high-volume commercial customers the ISP is allowed to obtain frequency licenses for delivering access without this infrastructure. In a more fully open environment the ISPs are also allowed to achieve customer access via cable systems as well as the local phone system.

It should be noted that when the PTT retains the only access point for international Internet access, with private sector ISPs providing the value-added services, there are typically a number

of problems that surface and retard growth of the Internet. These problems typically work against the private sector ISPs and to the advantage of the PTT. Some of the typical problems are: a) the PTT setting up its own ISP and competing directly with the private sector—only on a somewhat favored basis (e.g., providing ISPs and customers with more dialup lines, enabling toll-free access from any location in the country, providing quicker and higher-quality services, and even offering lower pricing or free ISP access), b) content filtering/censorship, c) providing more capacity to their own ISP when there is a shortage of Internet capacity out of the country, d) near absolute power to add a premium price for use of phone lines used by the ISPs over normal telephony, with no recourse on the part of the ISPs, and e) absolute power in establishing the pricing for Internet access out of the country, again without any recourse or alternative on the part of the ISPs.

**Full or Partial Privatization of the Government-Owned PTO**—One of the common approaches for obtaining private sector participation in the telecommunications sector is the selling off of a portion of the Public Telephone Operations (PTO). It is not uncommon for this to be accomplished in a series of public tenders where the initial sale is a 25-35 percent equity position—at times with an option for more if additional equity is sold in the future (e.g., Sri Lanka and Japan’s NTT). There are some situations in which the percentage bought is in the range of 35 percent but with a provision that the buyer obtains a majority voting right (51 percent). OTE did this in Romania. In other situations a majority position is actually bought (e.g., 90 percent of ArmenTel bought by OTE). Typically the purchase is linked directly to a provision that the firm be allowed to enter into any future telecommunications-related value-added service in the future. Also, that they be allowed to maintain a monopoly on identified services for a prescribed set of years—barring new entrants from eroding their potential market for a period of 5-15 years. At times the entire PTO is sold to a private firm (as it was in Jamaica to Cable and Wireless—with a 25-year monopoly provision and an option for another 25 years).

It is not uncommon for the partial or total selling off of the PTO to be driven by the need for the country’s need to obtain foreign currency, with little relationship to telecommunications issues. Another driver is typically the need to obtain investments (typically foreign) to provide broader telecommunications coverage in country. While the issue of granting an extended monopoly as part of the condition of sale is typically the major issue, another key issue is establishing the level and timing of investment commitments for expansion of the national network and interconnection issues where other operators already exist or will be allowed to operate in country. With regard to the monopoly issue, it’s not simply a matter of whether or not it is allowed to exist and for how long. The more important issue is “what does it cover?” If it is limited to the domestic landline network, then the potential damage is actually quite limited. If it includes international voice access, then it is not so benign but may be needed as a financial incentive. But if the monopoly pertains to mobile and fixed wireless and international Internet access, then simply put, the costs is likely too high, no matter what commitments are made for network expansion. Competition in these sub-sectors is essential for rapid build-out and to keep competitive pressures on the incumbent landline provider.

**Allowing Multiple Entrants for Local Telephony Distribution**—Yet another phase in the telecommunications sector liberalization is the introduction of alternative telephony distribution systems and private sector participants. This is typically one of the later phases of market

liberalization undertaken. The incumbent telephony provider remains a dominant position and frequently still retains a monopoly on the international voice such that all the new entrants still must go through the incumbent for switching services between the various providers and for accessing international voice services. Technologies that can be used to provide local telephony (besides the incumbent provider's landlines) include cable operators, mobile wireless (discussed above), fixed wireless, and small new-entrant landline providers (typically small rural community or regional systems allowed to operate in areas where the incumbent is not currently providing services). In the U.S. non-facilities based new entrants in theory can provide telephony services over plant owned and operated by the incumbent, but this is not likely to take off even in the U.S. market, let alone in developing countries—at least not in the foreseeable future.

This stage of liberalization raises a wide range of complex issues that require a strong and highly competent regulatory body. In addition to setting the direction, the regulator must be well prepared to deal with cost-based pricing, tariff rebalancing, interconnection issues, a national numbering plan and enforcement, number transfer, a number of technology standards related topics, quality of service standards and monitoring, etc. This requires a very mature regulator and private sector firms in the market.

One of the more important components that must be addressed prior to allowing new entrants into the domestic telephony market is the issue of tariffs. It is most common when a single monopoly provider (public or private) provides domestic local, domestic long-distance, and international services, that the tariff structure is such that there is considerable cross subsidization taking place. Typically long-distance and international calls are priced substantially higher than actual costs and local calls are frequently priced below actual costs. A similar situation can occur between business and residential customers—businesses paying higher prices than comparable residential use. Obviously if it costs more to provide the local service than the rate structure will support, no investor is going to enter the market. On the other hand, if new entrants are allowed to service only business and long-distance domestic and international, they can quickly erode the revenue stream of the incumbent such that this cross-subsidization can no longer occur. This tariff rebalancing of cost/pricing must be addressed and normalized by the incumbent before the market can be opened up for multiple private sector players. As a result, this rebalancing can at times delay the introduction of competition in the domestic telephony market and rate rebalancing frequently takes place over several years. As a side note: this issue is very similar to the concern incumbents have for Voice over IP (VoIP), where it can erode the high-margin long-distance and international voice traffic leaving the incumbent with lower margins and the requirement to provide local service where they actually lose money.

**Introducing Multiple Players in the International Telephony**—One of the last bastions of telecommunications market liberalization is that of international voice. As mentioned above, it is possible (and ideal) to separate international voice and data and allow data/Internet access early in the liberalization process. Some countries have taken this route, including Romania, Sri Lanka, Morocco, and others. Where in the past international voice has been a real “cash cow” for the PTOs, in recent years this has eroded considerably based in part on pressure by the FCC in their international tariff negotiations. However, as mentioned above, it's still major source of

revenue with high margins for most countries—margins used in many situations to off-set losses in delivering local services.

As a default, typically the PTO has made arrangements through a single international provider and anyone seeking international access simply passes through the national infrastructure to the monopoly's international access point. When competition is introduced into the domestic market (wireless, cable, or landline) this infrastructure arrangement remains and the new entrants must rely on the national gateway/access point owned and operated by the incumbent. Technologically moving from this default situation to one with multiple providers is relatively straight forward—where a more open national access point is established with multiple firms being allowed to provide access to the national infrastructure and customers allowed to choose their international carrier. As can be imagined, however, there are a number of regulatory and implementing details required to support this expansion.

Another approach used in some countries is to include in the licensing of new entrants (e.g., mobile wireless) a provision that for a set number of years they must rely on the incumbent for their international access. But after 2-3 years they are free to establish their own international connectivity. This approach places competitive pressure on the incumbent to rebalance their tariffs to a cost-based approach and provides a significant incentive for those bidding on the mobile wireless license such that the price they're willing to pay will likely be higher as their future revenues will also be higher. This was the approach taken in Morocco where the nation wide GSM license went for US\$ 1.2 billion.

NOTE: Refer to the Bibliography reflected as Appendix G for detailed reference materials associated with liberalizing telecommunication environments.

# Vietnam: ICT Assessment

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## Appendix F – 1999 ITU Statistics

Each year the International Telecommunications Union (ITU) publishes a World Telecommunications Development Report<sup>61</sup> that provides statistical data for all countries. Its most recent comprehensive report issued on 10 October 1999 included an expanded set of data that for the first time included data on mobile cellular. In addition to this worldwide report, on December 2000 the ITU published an Asia-Pacific Telecommunication Indicators 2000<sup>62</sup> report that concentrated only on the Asia-Pacific region and reflected updated data (1999 statistics).

This report provided an excellent source of base data for examining the telecommunications infrastructure portion of our analysis—upon which addition and updated information was collected and included into the analysis reflected under the Private Sector section. This region-specific report included data on Asia-Pacific countries as grouped into the following categories:

- **Lower-Income countries:** Bangladesh, Cambodia, China, Fiji, India, Indonesia, Kiribati, Lao P.D.R., Malaysia, Maldives, Nepal, Pakistan, Papua New Guinea, Philippines, Samoa, Solomon Island, Sri Lanka, Thailand, Tonga, Vanuatu, and Vietnam;
- **Upper-Income countries:** Brunei Darussalam, French Polynesia, Guam, Hong Kong SAR, Korea (Republic), Macau, New Caledonia, Singapore, and Taiwan-China
- **Developed Countries;** Australia, Japan, and New Zealand.

For purposes of this analysis, Vietnam data has been extracted from the recent ITU Asia-Pacific report and compared to: a) the neighboring countries of Lao P.D.R., Thailand, and Cambodia, b) the country averages in each of the three country income categories used by the ITU, and c) the average for all Asia-Pacific countries. The following tables provide more details of the situation in Vietnam. Following each table are keynotes clarifying some of the data on the tables, as well as short comments with respect to what one may conclude from the data, regarding Vietnam.

While these averages provide a benchmark for comparing Vietnam with countries in the Asia-Pacific region, it is important to recognize that this data includes the countries of China (with a population placed at 1,266.84 million) and India (with a population of 998.06 million). These two countries alone account for over 70 percent of the regional population and nearly 60 percent of its regional GDP as reported by ITU. Also included in this data is Indonesia with its population of 209.25 million, which is also large enough to impact regional data (3<sup>rd</sup> largest population in the Asia-Pacific and 4<sup>th</sup> largest populated country in the world). While Vietnam with its population of nearly 80 million, and close in population with neighboring Thailand with nearly 61 million, is quite large relative to other countries in the region, care must still be exercised in comparing Vietnam data with average Asia-Pacific data from the ITU report.

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<sup>61</sup> World Telecommunications Development Report—1999. Mobile and World Telecommunications Indicators. ITU. Geneva, Switzerland. 10 October 1999.

<sup>62</sup> Asia-Pacific Telecommunications Indicators 2000. ITU. Geneva, Switzerland. 3 December 2000



### Basic Indicators

Country	Population - 1999		GDP – 1998		Main Phone Lines	
	Total (Millions)	Density (per km)	Total (US\$ B)	Per Capita (US\$)	Totals (000s)	Teledensity
Viet Nam	78.71	239	26.0	335	2,105.9	2.68
Cambodia	10.95	60	2.1	196	27.7	0.25
Lao P.D.R.	5.30	22	1.3	250	34.5	0.65
Thailand	60.86	118	112.1	1,859	5,215.6	8.57
Lower-Income Total/Avg.	3,196.34	139	2,380.7	755	170,435.7	5.33
Upper-Income Tot/Avg.	80.93	489	856.0	10,672	38,742.7	47.89
Developed Tot/Avg.	149.30	18	4,216.4	28,292	82,263.9	55.10
Asia-Pacific Tot/Avg.	3,426.57	109	7,453.1	2,204	291,442.3	8.81

**NOTES:**

1. Calculations for GDP vary considerably based on source and calculations used. However, here it is presented by ITU's methodology and normalized across all countries in a consistent manner and therefore retained for comparison purposes.
2. Teledensity is the number of phones per 100 inhabitants

**Observations:**

- Vietnam's population is placed at 78.71 million in 1999, and has a significantly higher population density (239 per km) than its neighboring countries of Cambodia (60 per km), Lao P.D.R., Cam (22 per km), and Thailand (118 per km), as well as the other lower-income countries in the region (lower-income country average of 139);
- Vietnam's calculated Per Capital GDP of US\$ 196 is significantly higher than the neighboring countries of Cambodia (US\$ 196) and Lao P.D.R (US\$ 250), but also drastically lower than that of neighboring Thailand (US\$ 1, 859). It is approximately half of the Per Capita GDP for lower-income countries (US\$355 versus US\$ 755);
- Vietnam's teledensity of 2.68 (telephone lines per 100 inhabitants) is significantly higher than the neighboring countries of Cambodia (at 0.25) and Lao P.R.D (at 0.65), but substantially lower than that of neighboring Thailand (at 8.57). It is approximately half of the average for lower-income countries in the Asia-Pacific region (2.68 compared to 5.33); and
- It should be noted that with China's population of 1,266.84 million and a reported teledensity of 8.58, the lower-income average for teledensity average for the region is somewhat inflated due to China alone. Factoring China out of the lower-income teledensity average, the teledensity average is closer to 3.20—which places Vietnam's teledensity slightly below the regional average for lower-income countries.

### Main Telephone Lines

Country	Main Telephone Lines			Teledensity		
	1995 (000)	1999 (000)	CAGR % 1995-1999	1995	1999	CAGR % 1995-1999
Viet Nam	775.0	2,105.9	28.4	1.05	2.68	26.3
Cambodia	8.5	27.7	34.3	0.08	0.25	32.1
Lao P.D.R.	16.6	34.5	20.1	0.36	0.65	16.0
Thailand	3,482.0	5,215.6	10.6	5.86	8.57	10.0
Lower-Income	74,19.9	170,435.7	23.1	2.45	5.33	21.4
Upper-Income	32,864.5	38,742.7	4.2	42.53	47.87	3.0
Developed	71,724.8	82,283.9	3.5	42.53	47.87	3.0
Asia-Pacific	178909.2	291,442.3	13.0	5.49	8.51	11.5

**NOTES:**

1. CAGR = Compound Annual Growth Rate

**Observations:**

- Between 1995 and 1999, Vietnam’s growth in main telephone lines has been rapid and at a compound annual growth rate (CAGR) of 28.4, outpacing the rate of growth of its neighboring countries of Lao P.D.R (being 20.1%) and Thailand (being 10.6%), but slightly lower than that of Cambodia (being 28.4%). It should be acknowledged that the base upon which this growth has taken place is relatively low (only 775,000 main lines in Vietnam in 1995);
- This growth rate is slightly above the lower-income country average for the region (with a 1995-1999 CAGR of 28.4 percent compare to a lower-income country average for the Asia-Pacific region of 23.1 percent).
- Viewed from a teledensity perspective, Vietnam’s growth in main lines is slightly less as a percent of real growth (26.3% versus 28.4 percent), but still this growth is substantial and outpaces that of both neighboring countries and the lower-income countries in the Asia Pacific region (32.1% compared to 21.4%);
- Clearly there is some “catching up” taking place within Vietnam and the other lower-income countries relative to the upper-income and developing countries in this region (CAGR for lower-income countries being 21.4 percent and only 3 percent for upper-income and developed countries. But there’s a long way to go (note: growth rates typically do start to drop off when a country reaches a teledensity level of 30-40. Also the growth in deployment of mobile wireless telephony frequently serves as a substitute for main telephone lines and therefore must be factored in)—they are NOT included in these numbers; and
- China and India again have a significant impact on the averages for the lower-income countries in the Asia-Pacific region as between the two of them, the number of their main telephone lines account for 71 percent and 79 percent of the number of lines in the Asia-Pacific region for 1995 and 1999 respectively.

### Local Telephone Network

Country	Main Telephone Lines - 1999				Faults per 100 Main Lines/year 1999
	Capacity Used (%)	Automatic	Digital (%)	Residential (%)	
Vietnam	75.4	100.0	100.0	50.0	---
Cambodia	99.7	100.0	100.0	---	35.1
Lao P.D.R.	81.3	---	99.5	80.3	---
Thailand	68.4	100.0	100.0	67.0	178
Lower-Income	72.0	99.9	97.8	78.9	103.5
Upper-Income	81.6	100.0	85.2	72.8	1.5
Developed	---	100.0	100.0	69.6	46.0
Asia-Pacific	73.6	100.0	96.7	75.2	63.7

**NOTES:**

**Observations:**

- Vietnam's build-out of infrastructure is such that there is significant expansion capacity to support more growth in the number of lines (with 75.4 percent of the capacity used as of 1999). This reflects substantial in-place expansion capacity is already in place to support even further near-term growth in teledensity;
- Vietnam's telephone system is 100 % digital; and
- With respect to faults per line per year, no data is available for Vietnam

### Teleaccessibility - 1999

Country	Residential Main Lines		Public Telephones		
	Total (000s)	Per 100 Households	Total (000s)	Per 1000 Inhabitants	As % of Main lines
Vietnam	593.2	3.9	0.95	0.01	0.08
Cambodia	---	---	0.30	0.03	1.09
Lao P.D.R.	22.9	2.9	0.23	0.04	0.81
Thailand	3,496.6	22.4	139.25	2.29	2.67
Lower-Income	107,041.9	22.5	4,053.21	1.32	2.61
Upper-Income	28,047.5	112.1	745.06	9.23	1.93
Developed	51,667.0	97.5	820.47	5.50	1.00
Asia-Pacific	186,756.3	33.8	5,618.74	1.70	2.03

#### Observations:

- The ITU data reflects a very small percent of main lines are for residential use (593.2 thousand out of a total of 2,105.9 thousand. This places main lines in only 3.9 percent of Vietnam's households. While above Lao P.D. R (at 2.9 percent), it is well below that of Thailand (at 22.4 percent) and the average for lower-income countries in the Asia-Pacific region (at 22.5 percent);
- It should be noted that the ITU data for Vietnam appears may be in error regarding the number of main lines for residential use. One set of data shows 2,105.9 thousands total main lines in Vietnam, with 50 percent being residential, which would yield a number of approximately 1 million for residential use (earlier table), yet here only 593.2 thousand are reflected as residential mainlines.
- Vietnam has the lowest public telephone access by far of all the countries across the Asia-Pacific region. Not only is the teledensity low in general (e.g., per person or per household), but this appears not to be compensated by the reliance on publicly available telephone (only 0.09 percent of the total main lines compared to 2.61 percent for lower-income countries in the region.

### Largest City Main Lines - 1999

Country	Largest City			Teledensity	Rest Of Country	Overall County Teledensity
	Population as % of Total	Main Lines				
		(000s)	% of Total			
Vietnam	4.8	497.6	23.6	13.27	2.15	2.68
Cambodia	9.5	16.5	59.4	1.59	0.11	0.25
Lao P.D.R.	8.0	---	---	---	---	---
Thailand	11.4	2,587.1	49.6	37.13	4.88	8.57
Lower-Income	3.3	16,116.1	11.1	16.23	4.27	4.65
Upper-Income	29.6	13,505.8	35.9	56.23	43.85	47.61
Developed	9.1	9,921.5	11.2	72.31	53.75	55.34
Asia-Pacific	4.1	38,643.4	14.7	28.46	7.00	7.87

**NOTES:**

**Observations:**

- The ITU data reflects the predominance of Vietnam living in smaller towns and rural areas (with only 4.8 percent living in the largest city). This percent reflects slightly more than the average for lower-income countries in the Asia-Pacific region (4.8 percent as compared to 3.3 percent). However this is due in large part to the data being skewed by the large populations of China and India where the percent of largest city urban population is considerably less than Vietnam (China being 1.2 percent living in large cities and 1.7 for India);
- Vietnam teledensity data is not only extremely low, it reflects a large gulf between the number of main lines available to those living in the largest city of Hanoi (with a teledensity of 13.27) as compared to those living in the rest of the country (where the teledensity averages just 2.15); and
- This largest city/rest of country data for Vietnam reflects a concentrated focus in urban cities though in fact most of Vietnam's population live in non-urban areas. Relative to lower-income country averages in the Asia-Pacific region, the percent of mainlines in the largest city is 23.6 percent for Vietnam and just 11.1 percent for the average. On the other hand the teledensity in the largest city is just slightly lower than the lower-income country average (13.27 compared to 16.23). However for the rest of the country the teledensity difference is must more substantial (2.15 for Vietnam compared to 4.27 in other lower-income countries in the Asia-Pacific region).

### Telephone Tariffs - 1999

Country	Residential (US\$)		Business (US\$)		Local Calls US\$	% GDP per Capita
	Connection	Monthly Subscription	Connection	Monthly Subscription		
Vietnam	129	4.4	129	4.4	0.08	17.5
Cambodia	120	13.0	120	13.0	0.03	74.7
Lao P.D.R.	91	1.5	91	1.5	---	7.3
Thailand	89	2.6	89	2.6	0.08	1.6
Lower-Income	104	4.2	111	6.1	0.06	9.2
Upper-Income	70	9.3	73	16.2	0.08	0.7
Developed	261	14.1	261	23.6	0.08	0.9
Asia-Pacific	109	6.4	114	10.1	0.07	6.4

**NOTES:**

- The % GDP per capita column is the subscription cost as a percent of GDP per capita and is calculated based on 1998 GDP and population data.

**Observations:**

- Vietnam's connection and monthly subscription pricing (US\$ 129 and US\$ 4.4) for both residential and business is significantly above the neighboring countries of Lao P.D.R (US\$ 91 and US\$ 1.50) and Thailand (US\$ 89 and US\$2.60), but slightly higher than the *connection* costs of Cambodia (at US\$129 compared to US\$ 120) but lower than Cambodia's monthly subscription rate (US\$ 4.40 compared to US\$ 13.0). It is well above the other lower-income countries in the region (with an average connection fee of US\$ 104 and a monthly subscription of US\$ 4.20);
- Vietnam's local call rates of US\$ 0.08 are well above that of Cambodia (US\$ 0.03) but the same as neighboring Thailand (also at US\$ 0.08). This is slightly above the lower-income countries in the Asia-Pacific region (at US\$ 0.06); and
- As a percent GDP per capita Vietnam's telephone tariffs are nearly twice the average for the lower-income countries in the Asia-Pacific region. As defined by the ITU report, "*the subscription as a percent of GDP per capital shows cost of an annual residential telephone subscription as a percent of the Gross Domestic Product per capita.*" This figure carries the meaning that nearly 17.5 percent of a an individual's income (calculated on a per capita GDP basis) would need to be committed to owning and operating a telephone. The average for a lower-income country in the region is placed at 9.2 percent.

### Cellular Subscribers

Country	Cellular Mobile Subscribers					As % of Total Telephone
	Subscribers (000s)		CAGR % 1995-1999	Teledensity 1999	% Digital 1999	
	1995	1999				
Vietnam	23.5	328.7	93.4	0.42	78.4	13.5
Cambodia	14.1	89.1	58.6	0.81	71.3	76.3
Lao P.D.R.	1.5	9.0	55.7	0.17	100.0	20.8
Thailand	1,297.8	2,339.4	15.9	3.84	44.1	31.0
Lower-Income	6,872.4	57,119.9	69.8	1.79	84.4	25.1
Upper-Income	3,596.5	41,111.7	83.9	50.80	98.9	51.5
Developed	14,319.1	64,227.6	45.5	43.02	97.9	43.8
Asia-Pacific	24,788.0	162,459.1	60.0	4.74	93.4	35.8

#### Observations:

- Vietnam's growth rate in cellular mobile subscribers between 1995 and 1999, was significantly higher than other lower-income countries in the Asia-Pacific region (CAGR of 93.4 percent compared to 69.8 percent);
- Vietnam's growth rate is Cellular subscribers in higher than neighboring Cambodia with a CAGR of 58.6 percent, Lao P.D.R with a CAGR of 55.7 percent, and Thailand with a GAGR of 15.9 percent;
- There appears to be some level of cellular operators that are relying on analog rather than digital technology, with a percent digital use being off slightly from the lower-income countries in the Asia-Pacific region (78.4 percent compared to 84.4 percent);
- Only 13.5 percent of the telephones in Vietnam are mobile cellular. This places Vietnam as having the lowest percentage use of mobile cellular of any country(13.5 percent compared to a lower-income country average in the region of 25.1) with neighboring Cambodia having 76.3 percent of its phones being mobile cellular; and
- For comparison purposes, the main lines teledensity in Vietnam is placed at 2.68, whereas the mobile cellular teledensity in Vietnam is placed at 0.42.

### International Telephone Traffic – 1999

Country	Outgoing Telephone Traffic					International Circuits (000)
	Million Minutes		CAGR % 1995- 1999	Minutes Per Inhabitant	Minutes Per Subscriber	
	1995	1999				
Vietnam	38.8	46.6	4.7	0.6	22.1	5.4
Cambodia	5.2	7.3	8.9	0.7	263.5	0.5
Lao P.D.R.	4.5	7.9	15.2	1.5	230.1	---
Thailand	232.7	298.7	6.4	4.9	57.3	7.1
Lower-Income	3,116.7	4,557.3	10.0	1.4	26.7	127.7
Upper-Income	3,771.2	5,642.5	10.6	69.9	145.9	80.8
Developed	2,868.0	3,690.6	6.5	24.7	44.9	35.1
Asia-Pacific	9,756.0	13,890.4	9.2	4.1	47.7	243.5

**NOTES:**

**Observations:**

- Vietnam's growth between 1995 and 1999 in outgoing telephone traffic is considerably less than other lower-income countries in the Asia-Pacific region (compound average growth rate of 4.7 percent for Vietnam and a 10 percent average growth rate for lower-income countries.);
- Vietnam's international traffic on a *per inhabitant* basis is also approximately half of other lower-income countries in this region (0.6 minutes compared to 1.4 minutes per inhabitant); and
- Vietnam's international traffic on a *per subscriber* basis is slightly less than the average for the lower-income countries in the Asia-Pacific region (22.1 minutes per subscriber as compared to 26.7 minutes for the lower-income country average), but substantially lower than its neighboring countries with Cambodia at 263.5 minutes, Lao P.D.R., at 230.1 minutes, and Thailand at 57.3 minutes.

### Telecommunications Staff - 1999

Country	Telecommunications Staff			Main Lines per Employee		
	(000s)		CAGR % 1995-1999	1995	1999	CAGR % 1995-99
	1995	1999				
Vietnam	58.0	79.6	17.2	13	17	11.9
Cambodia	0.6	0.7	6.7	15	38	25.8
Lao P.D.R.	0.9	1.1	7.4	19	30	11.8
Thailand	34.9	34.0	-0.7	100	153	11.4
Lower-Income	1,235.2	1,466.7	4.4	59	114	17.9
Upper-Income	143.9	163.2	3.2	228	237	1.0
Developed	299.0	272.9	-2.3	240	301	5.9
Asia-Pacific	1,678.1	1,902.8	3.2	106	152	9.4

**NOTES:**

**Observations:**

- While Vietnam has expanded the number of lines substantially between 1995 and 1999 (e.g., mainlines grew from 775.0 thousand to 2,105.9 thousand—a 28.4 percent CAGR), the number of telecommunications staff also grew at a rapid CAGR of 17.2 percent (CAGR for lower-income countries in the region for this same period is 4.4 percent);
- Data for Vietnam reflects that its operational efficiencies have improved only slightly as the number of main lines being supported per employee is up marginally between 1995 and 1999 (13 per employee in 1995 to 17 in 1999); and
- The number of main lines per employee for Vietnam (17 per employee) are substantially less than that of neighboring countries with Cambodia supporting 38 lines/employee, Lao P.D.R. at 30 lines/employee, and Thailand having 153 lines/employees. The average for all lower-income countries in the Asia-Pacific region stands at 114 lines/employee.

## Telecommunications Revenue

Country	Telecommunication Revenue - 1999				
	Total (M US\$)	Per Inhabitant (US\$)	Per Main Line (US\$)	Per Employee (US\$)	As a % of GDP
Vietnam	640.8	8.1	304	---	2.4
Cambodia	21.4	2.0	771	29,215	1.1
Lao P.D.R.	22.8	4.3	662	20,064	1.7
Thailand	1,829.3	30.1	351	53,817	1.4
Lower-Income	50,244.2	16.0	299	34,715	1.5
Upper-Income	34,017.5	420.8	881	209,701	3.2
Developed	153,334.4	1,027.0	1,864	571,504	2.9
Asia-Pacific	237,596.0	70.3	822	129,589	2.5

**NOTES:**

**Observations:**

- Vietnam's telecommunications revenue on a *per inhabitant* basis is approximately half of the lower-income country average in Asia-Pacific (US\$ 8.10 compared to an average for the lower-income countries in the region being US\$ 16.00), though this is substantially higher than neighboring Cambodia with a figure of US\$ 2.0, and Lao P.D.R. with US\$ 4.30. Thailand is substantially higher with a number of US\$ 30.10;
- Vietnam's telecommunications revenue on a *per line* basis is consistent with lower-income country average (US\$ 304 versus US\$ 299); and
- Vietnam's telecommunications revenue as a percent of GDP is also amongst the highest in the Asia-Pacific region (telecommunications revenue being 2.4 percent of GDP as compared to an average for the lower-income countries of 1.5 percent);

### Telecommunications Investment

Country	Telecommunication Investment - 1999				
	Total (M US\$)	Per Inhabitant (US\$)	Per Main Line (US\$)	As % of Revenue	As a % of GFCF
Vietnam	321.3	4.1	153	50.1	---
Cambodia	---	---	---	---	---
Lao P.D.R.	9.5	1.9	388	41.7	---
Thailand	357.0	5.9	68	19.5	1.1
Lower-Income	25,761.2	8.2	153	51.5	4.1
Upper-Income	10,188.6	127.5	269	35.5	3.9
Developed	34,837.1	233.4	424	22.7	3.0
Asia-Pacific	70,786.9	21.1	246	30.5	3.4

**NOTES:**

- GFCF = Gross Fixed Capital Formation

**Observations:**

- Vietnam's telecommunications investments for 1999 are placed at US\$ 321.3 million, amounting to US\$ 4.10 per inhabitant. This compares to an average for lower-income countries in the Asia-Pacific region of US\$ 8.20/inhabitant (e.g., half the average);
- On a *per main line* basis, Vietnam's telecommunications investment for 1999 of US\$ 153,000 is consistent with the lower-income country average for the Asia-Pacific region; and
- On a *percent of revenue* basis, Vietnam's telecommunications investment for 1999 of 50.1 percent, is consistent with the lower-income country average for the Asia-Pacific region.

### Internet in Asia-Pacific - 1999

Country	# of ISPs	Internet - 1998				Personal Computers	
		Users (June 00)		Subscribers (000)	Int'l Bandwidth (Mbps)	Total (000)	Penetration %
		(000s)	Penetration				
Vietnam	5	150	0.19%	45	2	700	0.9%
Cambodia	2	5	0.05%	---	0.256	13	0.1%
Lao P.D.R.	2	2	0.04%	---	0.064	12	0.2%
Thailand	14	1,000	1.64%	200	66	1,382	2.3%
Developing	748	26,815	0.80%	5,466	857	31,174	1.0%
4-Tigers	277	26,157	32.9%	15,802	3,252	16,553	20.9%
Developed	4,811	33,600	22.5%	12,683	3,496	47,350	31.7
Asia-Pacific	5,836	86,572	2.5%	33,951	7,605	95,077	2.8%

**NOTES:**

- Note different categories from earlier tables (e.g., Developing, “4-Tigers” and Developed)
- 4 Tigers are: Hong Kong SAR, Korea (Rep), Singapore, and Taiwan-China

**Observations:**

- The ITU data reflects that as of 1999, there were 5 ISPs operating in Vietnam;
- The ITU data reflects that there were, as of June 2000, 150,000 Internet users in Vietnam;
- On a **percent of penetration** basis, Vietnam’s penetration of Internet is considerably below the average for the developing countries in the Asia-Pacific region (0.19% compared to an average of 0.80%). This was above that of neighboring Cambodia (with 0.05 percent) and Lao P.D.R. (with 0.04 percent), but well below Thailand (with 1.64 percent);
- The ITU data reflects that there were 45,000 Internet subscribers in Vietnam as of 1998 (reflecting a multiplier of approximately 3x relative to the number of subscribers—recognizing data is for different years);
- The ITU data reflects that there are only 700,000 personal computers in Vietnam in 1999;
- As a **percentage of population**, the number of personal computers within Vietnam is consistent with the average for developing countries in the Asia-Pacific region (0.9% compared to 1.0%); and
- There are staggering differences in the penetration of the Internet and personal computers within the Asia-Pacific countries when comparing the developing countries (including Vietnam) with the 4-Tiger countries and the developed countries (e.g., for Internet, less than 1% as compared to 33% and 22% respectively; and for personal computers, 1% as compared to 21% and almost 32% respectively).

### Dial-up Internet Access Prices in Asia-Pacific

Country	Internet Access Costs – October 2000 (US\$)						
	ISP Fees					Telephone Call Charge <sup>2</sup>	Total Charge
	Sign-up Fee	Monthly Fee	Free Hours	Excess Time	Total Charge <sup>1</sup>		
Vietnam	19	3.21	0	31.43	34.64	7.57	42.41
Cambodia	50	---	7	69.00	99.00	18.40	117.14
Lao P.D.R.	58	33.00	35	---	33.00	---	33.00
Thailand	---	---	0	10.81	10.81	2.40	13.21
Lower-Income	23	17.43	13	29.09	46.52	12.37	58.89
Upper-Income	2	17.94	7	3.82	19.35	23.50	42.85
Developed	---	21.19	40	---	21.19	21.01	42.20
Asia-Pacific	15	18.01	16	19.44	36.35	16.33	52.68

**NOTES:**

1. Total ISP Fees are amounts payable to the ISP calculated on the basis of 30 hours per month use.
2. Telephone Call Charge are amounts payable to the local telephone company for local telephone charges while logged onto the Internet based on 30 hours per month use (with half being peak and half being non-peak time)

**Observations:**

- ISP-related *Internet access costs* (signup, monthly, and excess time) are all lower in Vietnam as compared to other lower-income countries in the Asia-Pacific Region (For sign up fee, US\$ 19 compared to an average of US\$ 23 for lower-income countries and that this provides minimal free time as part of the basic package;
- *Telephone call charges* for accessing the Internet in Vietnam are lower in Vietnam than they are on average in the lower-income countries in the Asia-Pacific region (US\$ 7.57 in Vietnam compared to US\$ 12.37 for lower-income countries and US\$ 16.33 for all countries in the Asia-Pacific region; and
- *Total charges* (ISP and line charges) for having Internet access in Vietnam is less than the lower-income country average for the Asia-Pacific region (US\$ 42.41 compared to US\$ 58.89 for lower-income countries and US\$ 52.68 for all countries in the Asia-Pacific region).

# Vietnam: ICT Assessment

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# Vietnam: ICT Assessment

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