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Laos

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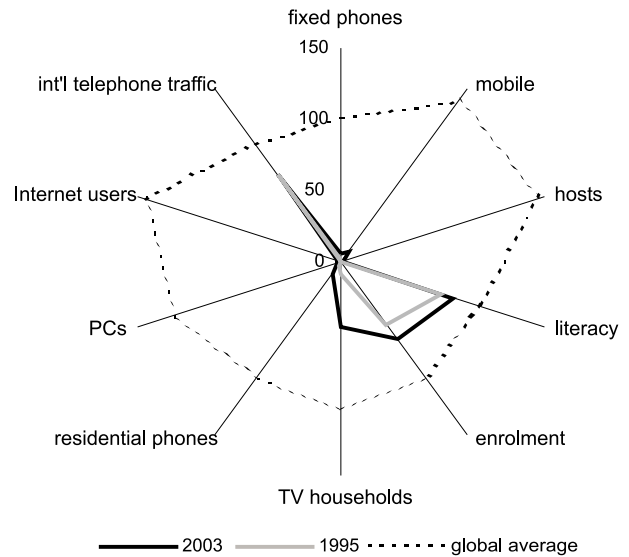
Overview

Laos (Lao People's Democratic Republic) is facing many obstacles in introducing ICT to the country because of a shortage of skilled personnel. Expertise is required in building this critical capacity through human resource development programmes. The government established the Information Technology Centre in the Science, Technology and Environment Agency (STEA) in 2000 as the central agency overseeing the ICT sector. The centre conducts R&D and training and provides services related to ICT throughout the country.

Laos has a long way to go in providing its population universal telephone service. It is estimated that under 1 percent of households have a telephone. Less than half of the districts in the country have fixed telephone services, and only urban areas in half of the provinces are covered by mobile cellular signals. There is no specific plan for developing universal access to telecommunications services. The country faces immense technical and commercial challenges in expanding telecommunications coverage, as most of the population resides in rural areas while transport and electrical infrastructures are scarce and incomes are low.

Internet access is available only in those cities with telecommunications infrastructure. The Internet is used mainly for email and browsing. Only government ministries maintain their own websites, providing basic information on their respective roles and structures. E-government of the extent seen in developed countries is a distant concept for Laos. In fact, the government has not provided any online services.

Infrastructure

Four companies – Enterprise of Telecommunications Lao (ETL) of the government, Lao Telecommunications Ltd (LaoTel), Lao Telecom Asia Co. Ltd and Millicom Lao Co. Ltd (Tango) – provide telecommunications services throughout the country. Laos has 18 provinces, of which 5 are served by fibre optic networks in their capitals. ETL plans to cover the other 13 provincial capitals by 2004 and 142 district headquarters by 2005. As of September 2004, there were 86,236 PSTN lines in service provided by three operators. However, out of this total, only 1,706 were in rural provinces, covering 50 districts and 22 remote villages. There were only about 300 public telephones, all of them located in the larger cities. Also, there were 250,279 mobile phone subscribers served by four operators, with LaoTel controlling about three-quarters of the market. GSM networks are available in half of the provinces. LaoTel has established a backbone via a 34-Mbps microwave transmission system connecting 13 main cities to the country's capital, Vientiane. It is also in the process of installing telephones in remote areas throughout the country. Despite the availability of mobile services for eight years, Laos has not experienced a wireless boom to the same extent as other developing countries have.

Currently, Internet access is provided by seven ISPs: ETL, LaoTel, Lanexang Internet Ltd, Planet Internet, KPL Internet (previously GlobeCom), Champalao Internet and Lao National Internet Committee (LANIC). All the ISPs are privately run except for LANIC, which is operated by the government and provides services to government organisations and academic institutions only. ETL, although government owned, operates as a commercial company. There were about 3,800 subscribers registered with the private ISPs as of May 2003. LaoTel also controls around three-quarters of the ISP market.

An analysis of subscribers data reveals that government organisations form 10 percent of the total number, local private companies 20 percent, local individual users 23 percent, and foreign users from embassies, international organisations and NGOs as well as business visitors the remaining 47 percent. Since 2003, LANIC has also provided free Internet access via wireless links to 16 government organisations and academic institutions in Vientiane. It is estimated that some 1,000 PCs are connected to this wireless network, together with about 500 PCs in six laboratories of

the National University of Lao PDR (NUOL). There were an estimated 15,000 Internet users in the country as of May 2003. This translates into a ratio of 2.88 Internet users for every 1,000 inhabitants. The number of Internet users had increased from 1 per 10,326 inhabitants in 1998 to 1 in 346 by December 2002.

It is estimated that there are 250 Internet cafés in the whole country with 70 situated in Vientiane Municipality. The connection speed at Internet cafés has improved significantly with the installation of fibre optic cables by ETL.

LANIC, NUOL, local ISPs and the Swedish Royal Institute of Technology are collaborating to establish the National Internet Exchange Gateway, which is expected to interconnect all the local ISPs through optical fibre. This initiative is funded by the Swedish International Development Agency.

ICT education

Most of the ICT specialists in Laos are graduates of foreign universities, mainly from Australia, France, Japan, Singapore and Thailand. Very few academic institutions within the country provide ICT education at the degree level.

In 1998, NUOL started the first computer science programme at the Department of Mathematics and Physics of the Faculty of Science, which leads to a Bachelor of Science degree in mathematics and computer science. The five-year programme begins with two years of foundation studies, which are compulsory for all NUOL students. The course focuses on the theories of mathematics and computing, as opposed to computer engineering, which deals more with hardware fundamentals and hardware design. More the 100 students have graduated from the programme.

In 2002, with assistance from the Japan International Cooperation Agency, the Department of Electronics of the Faculty of Electronics and Engineering at NUOL began an IT bridging course that leads to a Bachelor of Information Technology Application. Students applying for this two-year programme must have at least a bachelor's degree related to mathematics, electronics, engineering or management. So far, about 40 students have completed the course.

There are private colleges providing ICT education at the pre-university level in areas such as networking, database management, and accounting and management. These colleges include Lao American, Comcenter, Ratana, Sensavanh and Ques.

ICT usage

Internet usage in Laos is increasing faster than the growth in mobile phones, fixed telephone lines and computer ownership. The number of ISPs, Internet cafés and users has risen significantly. At the same time, prices have fallen dramatically. The Internet is used mainly for email and entertainment. There is very little usage for education or for obtaining government and commercial information.

A survey conducted by LANIC at the beginning of 2004 showed that the 25 government organisations in Vientiane own a total of 2,456 PCs. As these organisations have a total of 6,633 staff members, it may be concluded that each PC is shared by an average of 3 staff members. This ratio is high when compared to other developing countries. However, the PCs are not distributed evenly across the organisations. For example, the Ministries of Education, Communications, Finance, and Foreign Affairs, the National Bank and STEA own more than half of the PCs. On the other hand, the Ministries of Agriculture, Public Health, and Justice as well as the military have less than 10 percent of the computers, even though they have more staff.

The survey found that 31.7 percent of the PCs in these government organisations are connected to the Internet and 21.7 percent of government officers access the Internet every working day. These officers spend 60 percent of their time online on email, 37 percent on searching for foreign information, and only 2 percent on seeking local information.

In the private sector, computer systems can be found only in large companies; and only those companies that communicate with overseas partners have email and Internet access. There is very little ICT utilisation among small and medium enterprises because of the high cost of the technologies and the fact that their business is focused on the local market where there is little use of ICT for business communication and transactions. The only feasible e-commerce activities are found in the tourism industry. Since visitors to Laos are increasing, ICT usage in this industry is expected to grow.

Research and development

The Research Project on Building Rural–Urban Digital Link in Lao PDR, funded by a C$400,000 grant from IDRC of Canada to STEA and the Participatory Development Training Centre, aims to increase accessibility to and the development of basic skills in ICT in both the rural and urban areas of the country. The project established and equipped the Luang Prabang Multi-purpose Community Telecentre to support basic ICT skills training in the community. The centre also helps schools, businesses and development groups to adopt ICT to support their social and economic activities. Officially opened in March 2003, the centre is now running at full capacity after starting from scratch with users who lacked both basic computer skills and English proficiency. Nicknamed "e-Way", it is open seven days a week. Many people have signed up for its courses, which are designed to provide participants with basic computer and English-language skills as a first step towards the acquisition of higher ICT skills.

IDRC is also funding the regional PAN Localization initiative to develop local-language computing capacity in Asia. STEA is taking part in this initiative to develop a Lao font, keyboard driver and lexicon, as well as a Lao–English

dictionary with sorting, spell-check and grammar-check functions.

Open source movement

The open source movement in Laos is not active, as the concept is still very new to the country. Also, most users have the misconception that they need to be skilled in computing, especially in programming, in order to use open source software. The lack of IT skills is one of the reasons why open source software remains unpopular. However, some initiatives are underway to promote its use.

The Open Source Laboratory of the Information Technology Centre in STEA was established in December 2002 with the assistance of the Francophone Organisation. The laboratory's initial focus is to create awareness and promote open source software. It also conducts training courses on the use of such software.

Most, if not all, ISPs and new-generation telecommunications operations in Laos are acquiring hardware such as servers with the option of running Linux as the operating system of choice. The savings from using lower-cost freeware or custom shareware allow them to increase their hardware budget. There are an estimated 20 Linux servers operating in the ISP market. The National Internet Exchange Gateway is also using Linux for its email, web, firewall, and domain name system servers. LANIC has also encouraged the government to use Linux servers for Internet access and email. Some 20 IT engineers from various government ministries have been trained on Linux, and ten Linux servers have been installed in the ministries.

The LaoNux project is a Linux localisation effort initiated by Anousak Souphavanh, a Lao expatriate living in the USA. The project, funded by the Jhai Foundation, strives to bring the benefits of ICT to the masses by making the new technologies accessible to the people of Laos, the majority of whom cannot read or write English. The software it will introduce includes Lao OpenOffice and Xangdao.

Computer companies are also contributing to the open source movement by offering a free Linux operating system as an option when customers purchase new computers and servers. The savings on software costs allow customers to make further purchases. Major computer training companies also are providing training courses on open source. Ques College, in particular, teaches Linux as part of its main curriculum.

Regulatory environment

The legislation in Laos has not kept up with the rapidly changing ICT environment. Existing regulations were drafted at a time when the unique challenges of the ICT environment today were not envisaged. To boost the confidence of private sector investors and members of the public, clear legal guidelines and policies are needed. It is therefore essential

to review and amend existing laws and regulations that are relevant to ICT development and, where necessary, enact new ones based on international best practices and model laws. There is also a need to strengthen existing regulatory institutions or establish new ones that can contribute to this process. These institutions may include government organisations, private sector groups, NGOs and community groups. Presently, the regulations governing ICT matters include the following.

Telecommunications Law No. 02/NA

This law was approved by the National Assembly in April 2001. It governs the regulation of telecommunications organisations and activities; the management of radio frequencies for radio communication, sound and television broadcasting, and other uses; the administration of IP address numbering and the Internet infrastructure; the management and use of satellite positions and orbits; the administration of the country code top-level domain; and the management of telecommunications and Internet services nationally and internationally.

The law provides for competition and cooperation among local and foreign investors in the construction, development and expansion of the telecommunications network and services within the framework prescribed by the government.

The management and oversight of the telecommunications sector is undertaken by the Ministry of Communications, Transport, Post and Construction at the national level together with its departments at the provincial level and its offices at the district level. The ministry is given the exclusive right to decide the issuance, suspension and termination of licences for the establishment and extension of telecommunications businesses.

Regulation No. 141/PMO

Issued in April 2000, this regulation governs the management, use and maintenance of the Internet in Laos. Its objective is to ensure that the Internet is used in an orderly, secure and efficient manner in accordance with national policies, laws and regulations.

Under this regulation, only LANIC is authorised to issue ISP licences. Moreover, any individual or organisation is prohibited from using the Internet in Laos for undesirable purposes, such as inciting acts to destabilise the society or the country, inciting acts of violence or crime, pornography, revealing state or military secrets, publishing false information or distorting information, and violating the privacy and rights of individuals or organisations.

Enabling policies

The national ICT policies and strategies have been formulated and they await national consultation and

government approval. The policies aim at developing and deploying ICT to support economic and social development that is progressive and sustainable. As resources are scarce, prioritisation is necessary. Also essential is a holistic approach that is pragmatic and effective in resource utilisation. At the same time, it is important to recognise the country's economic vulnerability because of its heavy dependence on the external markets as well as the social disparities due to geographical and developmental gaps between the capital and the provinces.

The national vision spelt out in the policy document is to bring the nation into the digital age by building modern telecommunications networks with low connection costs and achieving a high rate of computer literacy among the people. ICT applications will be introduced to the banking, education, health, transport, and public administration sectors. The government will provide the political leadership and vision for the implementation of national ICT strategies and will pursue a top-down approach to facilitate integration. The salient objectives of the policies include these:

- To implement a national ICT infrastructure plan which includes the development of human and IT resources.
- To pursue priority ICT strategies, programmes and projects which accelerate development plans, stimulate growth, provide new opportunities in various sectors and create jobs.
- To provide universal access to telecommunications services at an affordable price.
- To provide a legal framework governing e-commerce transactions and to establish legal institutions that will protect consumers and businesses.
- To formulate a legal and policy framework to encourage the creation and protection of intellectual property as part of the country's WIPO commitments.
- To promote open source standards and software as well as free or low-priced software.

Trends

The government aims to stimulate and develop production activities, to transform the focus of the economy from agriculture to services and industry, to develop the domestic market and link it to regional and global markets, and to improve the trade-related infrastructure of the country. To attain these goals, the following potential income-generating activities have been identified for study to determine if growth, productivity and income generation may be increased through the application of ICT:

- Improving irrigation systems to increase food production and promoting crop diversification
- Development of hydroelectric power facilities
- Forest resource management including reforestation programmes to sustain the production of high-value timber

- Development of various products for export
- Improving the quality of minerals for export
- Construction of warehousing facilities to take advantage of the country's proximity to large markets
- Development of transportation and communications infrastructure
- Promoting economic and investment opportunities in Laos to foreign investors

It is important that there is ready access to information as well as sharing of information on the progress of projects among the agencies and the people involved. This will ensure that efforts are not duplicated, resource usage is optimised, expertise and technologies can be tapped by those who lack them, and results are communicated to help others make improvements and find solutions to problems.

To maximise the benefits that can be derived from ICT, priority should be given to developing the following areas:

- Expanding the role of the Information Technology Centre to make it more effective
- Nurturing professional and technical ICT experts who are able to plan, design, install and maintain information facilities
- Developing applications and systems for e-government to improve the effectiveness and efficiency of the public sector
- Strengthening ICT education by establishing a master's programme in computer applications
- Introducing ICT into agriculture and rural development via the establishment of community-based telecentres in all the provinces
- Establishing provincial Internet gateways
- Establishing VSAT-based intranet connections to rural communities
- Strengthening Internet penetration and expanding e-business opportunities

Realising the vision of an information society must start with the interests of the people – not so much their interests as consumers, but more importantly their interests as citizens who need to have access to information and telecommunications services in order to participate effectively in the decision-making processes of the country.

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