

# .vn

## Vietnam

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Total population	86,116,559 (2008)
Literacy rate	90.3%
GDP per capita	USD 780
Fixed-line telephones per 100 inhabitants	43.03 (2007)
Mobile phone subscribers per 100 inhabitants	27.16 (2007)
Internet users per 100 inhabitants	23.75 (2008)
Domain names registered under .vn	84,492 (2008)
Broadband subscribers	1,842,856 (2008)
Internet international bandwidth	27,860 Mbps (2008)

(Sources: General Statistics Office of Vietnam 2008; VNNIC 2008)

### INTRODUCTION

Information and communication technology (ICT) is one of the top priorities in science and technology (S&T) development in Vietnam. It has been on the agenda of the country's policy-makers since the mid-1970s and investments were made in ICT development in the 1980s and the 1990s. Concrete measures that have taken ICT development in Vietnam to a higher level include the Master Plan for ICT Development for 2005–2010 adopted through Government Resolution No. 58 by the Party Politburo, the creation of the National Steering Committee for ICT headed by the deputy prime minister, and the creation of a new Ministry of Information and Communication.

More recently, with the country's adoption of an open door policy leading toward international economic integration and modernization and industrialization by 2020, ICT has once again been emphasized as a top priority among high technology initiatives. However, ICT has been seen more as an economic sector rather than as an enabler of development. Thus, until 2000 ICT development efforts tended to focus more on industrial production targets for hardware and software that were sometimes unrealistic. Since then there have been many improvements in ICT development in Vietnam.

### TECHNOLOGY INFRASTRUCTURE

Keeping in mind the idea that a good ICT infrastructure is necessary to enable development, Vietnam is putting considerable effort into the modernization and expansion of its telecommunication system. Annual growth in the telecommunications sector is approximately 25 percent. In 2005–2006, Vietnam's ICT growth

rate was double the average in Asia and triple the world average expansion rate. New technologies such as third generation (3G), fourth generation (4G), Worldwide Interoperability for Microwave Access (WiMAX), mobile television (TV), and Next Generation Networks (NGN) are being promoted and are becoming major trends in the development of Vietnam's telecommunications industry.

All provincial exchanges are now connected to Hanoi, Da Nang, and Ho Chi Minh City by fibre optic cable or microwave radio relay networks; main lines have been substantially increased; and the use of mobile telephones is growing rapidly. For international connections, there are landing points for the South East Asia–Middle East–Western Europe 3 cable system (SEA–ME–WE 3), and the Thailand–Vietnam–Hong Kong submarine cable systems. Also, the Asia–America Gateway submarine cable system, which is scheduled for completion by the end of 2008, will provide new access links to Asia and the United States (US). The satellite Earth Stations-2 (Intersputnik) continue to operate. Asymmetric Digital Subscriber Line (ADSL) services and broadband access are also being used to improve the quality of Internet access.

In rural areas the use of telecom services, particularly telephones, is improving. But the extent of Internet use is not the same among the regions, with 86 percent of Internet use concentrated in Hanoi and Ho Chi Minh City and limited use and poor connections in rural areas.

There are six telecommunications operators in Vietnam, of which two are regional with geographical restrictions on their operations and one is able to provide maritime communication services. Almost all Vietnamese telecommunication companies

are state-owned enterprises with minor private investment, and there is cross-ownership among carriers. Vietnam Post and Telematics (VNPT) is a major state-owned enterprise operating in almost all telecommunications fields except for maritime telecommunications, and it holds approximately 94 percent of the fixed telephone market and 72 percent of the cellphone market. Viettel is under the Ministry of Defense. It provides fixed line, long distance, and IP-based telecommunications services, as well as leased lines and mobile communications. EVN Telecom, which is wholly owned by the state-run Electricity of Vietnam Group, also provides fixed line, long distance and IP-based telecommunications services, leased lines, and mobile communications. Vishipel is a 100 percent owned subsidiary of Vietnam Maritime Corporation, which provides marine communications services. Saigon Postel Telecommunication Company (SPT) is the first enterprise to be equitized with a number of large shareholders, including VNPT, which holds 18 percent of the total shares. Hanoi Telecom is the first telecom carrier with private investment, and this company provides services for fixed lines in the Hanoi area only and long distance and Internet Protocol (IP) based telecommunications, leased lines, and mobile communications.

According to the Ministry of Post and Telematics, in mid-2008 Vietnam had about 38.8 million phone subscribers. Telephone access is currently available to all communes nationwide. As of 2007 the number of telephone lines in use was 10.8 million.

There were 2.7, 4.5, and 8.7 million people mobile phone subscribers in 2003, 2004, and 2005, respectively, indicating a two-fold increase every year. Between 2006 and 2007, the number of cellphone subscribers grew by 70 percent from 10 million to 17 million. In 2006, cellphone subscribers accounted for 61 percent of total phone subscribers. It is predicted that the number of cellphone subscribers will hit 20 million and 25 million in 2008 and 2010, respectively.

The market in Vietnam is currently divided among five cellphone network operators, with one new entrant planning to launch services soon. The market is dominated by the top three carriers Vinaphone, Mobifone, and Viettel Mobile, with approximately 4 million, 4.7 million, and 2.5 million subscribers, respectively. Hanoi Telecom will be the first to rollout 3G services as part of a project with Hutchison Telecommunications setting up a CDMA2000 3G mobile network valued at USD 655.9 million.

It is anticipated that EVN Telecom and Hanoi Telecom will bring a breath of fresh air into Vietnam's telecommunications market, although these two new cellphone carriers have not created any remarkable changes except for balancing the number of carriers using two different Global System for Mobile

communications (GSM) and Code Division Multiple Access (CDMA) technologies (i.e. three licenced mobile network operators are running or will operate GSM mobile networks operators, and three are running CDMA mobile networks). While there are now three CDMA networks, their development is rather weak and the number of subscribers is low. However, EVN Telecom and Hanoi Telecom use CDMA technology with advanced 3G capabilities (faster than GSM). This will certainly help them to become top carriers in the future. Currently, the telephone network of VNPT has over 6.3 million subscribers, of which 2.3 million are mobile phones. VinaPhone and MobiFone have nationwide coverage and roaming services in 50 countries. Vinaphone's 2.8 million subscribers and MobiFone's 1.7 million subscribers account for 42.34 percent of the total subscription.

In terms of Internet development, Vietnam ranks third in the world, with a 27.48 percent increase in the number of Internet users over the past four years (Gov3 2005). As of September 2008, the number of Internet subscribers in Vietnam stood at 3.86 million, of which there were 1,842,856 broadband subscribers (VNNIC 2008). The number of regular Internet users has been pegged at 20,454,873 people or 23.75 percent of the population. This is expected to reach 35 percent by 2010.

Broadband market demand has increased significantly. However, Internet distribution is not even, with 72.76 percent of Internet subscribers in the two cities of Hanoi and Ho Chi Minh. Seven other cities and provinces account for 10.48 percent, and the remaining 55 provinces account for only 16.76 percent. About a third (32 percent) of the communes has access to the Internet. In 2007, the number of Internet hosts reached 106,772.

By mid-2007, the total bandwidth to link Vietnam internationally was 8,703 Mbps, a 150 percent growth in 12 months. In 2008 there are 84,492 websites under .vn and 764,672 IP addresses. The total bandwidth for subscribers is 339,734 and the total leased line equivalent to 64 Kbps is 9,853.

Six companies are licenced IXPs and 13 are Internet service providers (ISPs). The largest ISPs in 2006 were VNPT with 43 percent of the market, FPT Tel with 24 percent, and Viettel with 18.61 percent. The new ISPs include Hanoi Telecom, OCI (One-Connection Internet Service Joint Stock Company), and Tienet (Trade Import Export Company — TIE).

Currently, all 64 provinces and cities have completed a program of Internet development in universities, colleges, and schools. Most government organizations and agencies at the central and provincial levels have access to the Internet. Half of secondary schools and provincial hospitals are networked, while 92 percent of companies are linked to the Internet.

In May 2006, US-based Lockheed Martin and VNPT were awarded a USD 168 million contract to supply Vietnam's first communications satellite. Vinasat, as the satellite is called,

was launched in April 2008, and it is expected to provide roughly 15 years of service. It will provide broadcast and telecommunications service (video, data, voice) to the Asia Pacific region. With its first telecom satellite, Vietnam expects to save the tens of millions of dollars paid each year by Vietnamese state-owned firms to foreign satellite operators for use of international channels.

The improvement of infrastructure has strategic importance not only for economic and business users. With Vinasat, most of the poor farmers along the Mekong River will receive free broadcast of more than 10 new TV channels.

## KEY INSTITUTIONS AND ORGANIZATIONS DEALING WITH ICT

In August 2007 a new Ministry of Information and Communication was created through the merger of the Ministry of Post and Telematics with some units of the Ministry of Culture and Information. There is also a new National Steering Committee for ICT headed by the deputy prime minister. The Committee is expected to assist the Prime Minister in overseeing ICT development and to play a key role in cross-cutting and inter-ministerial coordination of ICT issues.

ICT-related activities are also being implemented by other ministries, such as the Ministry of Science and Technology (MOST). Also in 2007 the Ministry of Trade was merged with the Ministry of Industry to become the Ministry of Industry and Trade (MOIT), with responsibility for developing e-commerce. Training and education in ICT is organized by the Ministry of Education and Training (MOET).

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

Several non-government organizations also play a key role in ICT development. The Vietnam Association of Information Processing (VAIP), Hanoi Association for ICT, Ho Chi Minh City Computer Association (HCA), Vietnam Association of Electronics Enterprises, Vietnam Software Association (VINASA), and Vietnam Chamber of Commerce and Industry (VCCI) are very active and they work closely with the government in ICT initiatives. In 2007, a new association called the Vietnam e-Commerce Association (VECOM, [www.vecom.vn](http://www.vecom.vn)) was created to promote e-commerce.

## ICT AND ICT-RELATED INDUSTRIES

The Vietnam ICT market in 2006 was valued at USD 1.15 billion, representing a year-on-year growth of 22.6 percent. Hardware accounted for USD 730 million while software and services accounted for USD 285 million.

The hardware industry includes production of PCs, telecom equipment, electronics products, and components. Some Vietnamese companies have manufactured and assembled PCs from imported SKD components. Some have cooperated with foreign enterprises in assembling computers with brand names from Vietnam such as CMC, SingPC, Mekong Green, VINACom, T&H, Robo, Elead, and others. The production of other telecom equipment such as switch systems has been increasing. In 2006, the hardware industry reached a turnover of USD 1.38 billion, of which USD 1.233 billion came from exports and USD 147 million from the domestic market.

Several multinational companies have begun to increase their investment in the ICT market. One of the most important is the Intel investment in Ho Chi Minh City of more than USD 500 million. Among the largest producers and exporters are companies like Canon or Fujitsu.

The software industry in Vietnam is being developed mainly by small groups with a staff of 20–30 experts who focus on dealing with Vietnamese requirements and carrying out software services. There are around 6,000 software firms in operation, with a total of 15,000 employees. There are nine software parks in Vietnam. Subcontracting software for export in 2006 reached USD 360 million, representing a 44 percent growth compared to 2005. Of the 2006 total, USD 255 million (70.1 percent) was from the domestic market and USD 105 million (29.9 percent) was from exports. The value of the software industry in 2007 is USD 498 million.

Vietnam's content industry is just starting out, with some discussion of digitizing all archive and library materials available in written formats and a government program to develop digital content.

Venture capital is taking an interest in the ICT industry. IDG Ventures Vietnam, the country's first technology venture capital fund, has already taken a stake in more than 25 local ICT companies. IDG Ventures Vietnam has also helped to popularize many local websites, including the music site [www.yeuamnhac.com](http://www.yeuamnhac.com), e-markets <http://chodientu.vn> and [www.sanotc.com](http://www.sanotc.com), and stock market information site [www.Vietstock.com](http://www.Vietstock.com). DFJV, another technology venture capital fund that is a joint venture of VinaCapital and Draper Fisher Jurvetson, invested more than USD 15 million in eight domestic companies during the past year.

## KEY ICT POLICIES, THRUSTS, AND PROGRAMS

Several key ICT-related policies were promulgated in 2005–2006, such as those supporting enterprises in the application of ICT and serving the need for integration and development in 2005–2010, calling for the development of a master plan to develop e-commerce in 2006–2010, targeting development of ICT in Vietnam until 2010, and developing telecommunications and the Internet in Vietnam until 2010.

In 2007 new policies were adopted to further enhance ICT development in Vietnam. Resolution No. 51/2007 to develop the software industry until 2010 was issued. The resolution adopts a more practical approach and realistic targets for the software industry. Decree No. 71/2007 targets the development of the ICT industry in general. Resolution No. 6/2007 calls for the development of the content industry up to 2010.

The private sector is working with the government and taking an active role in the implementation of these resolutions. Still, due to limited resources, ICT efforts at the grassroots level, especially in the rural areas, tend to be less active than in large cities like Hanoi, Ho Chi Minh City, or Danang.

## LEGAL AND REGULATORY ENVIRONMENT FOR ICT

ICT-related laws that took effect in 2006 include the law on electronic transactions, the law on information technology, the law on IPR that has a special section on software development, and the decree on e-commerce. As such, it can be said that 2005–2006 was when a strong legal foundation for ICT development was laid in Vietnam.

To concretize these laws and decrees, more specific regulations were enacted in 2007. The more notable among these are:

- The regulation regarding financial management of funds for public telecom services;
- Directive No. 04/2007 enhancing the protection of copyright on software;
- Decree No. 26/2007 on digital signatures;
- Decree No. 35/2007 on electronic transactions in banking; and
- Directive No. 03/2007 enhancing information security over the Internet.

These laws and regulations clarify the legal parameters and thus encourage e-commerce and e-business activities. They help in the resolution of legal disputes and other potential problems

that are new and unfamiliar. One example is the law on ICT that clearly regulates the rights and responsibilities of individuals and organizations in the ICT industry, human resource development in ICT-related fields, and ICT-related research and development (R&D). The law also specifies incentives for developing the ICT market for key products and services and ICT special zones.

To promote specific ICT-related thrusts, some resolutions have been put forward, such as Resolution No. 52/2007 on the implementation of e-customs services. In addition, the Law on Telecommunication is being drafted and should be passed by the National Assembly in 2010.

## DIGITAL CONTENT INITIATIVES

The Ministry of Information and Communication has drafted a master plan for digital content development. The target is for the digital content industry to earn about USD 400 million in revenues by 2010. To this end, some 300,000 content industry experts will be trained. The industry will include key activity areas such as e-learning, games (online, interactive and mobile), online publications, content development for the Internet, digital libraries, digital film and multimedia, and other value added services (VAS). At present there are about 400 enterprises working in the content industry and they are concentrated in Hanoi and Ho Chi Minh City.

On 3 May 2007, the government signed Decision No. 56/2007/QĐ-TT to ratify the development of the digital content industry. The digital market is beginning to draw the attention of some large companies. In 2007 Yahoo entered the Vietnamese market with several services in Vietnamese, such as Yahoo!Mobile gate, Yahoo!messenger, and Blog 360 and 360 Plus. Microsoft and Google are also targeting the Vietnamese market. Smaller Vietnamese players have started social communities and networks such as Blog Viet, Young Generation, and Bamboo.

However, much remains to be done to ensure that digital content in the Vietnamese language is available for citizens to use (see ‘Challenges in Internet Use of S&T Staff in Rural Communes in An Giang’).

## ONLINE SERVICES

### e-Government

The program to computerize state management, called Program 112, aimed to link central government offices in Hanoi and ministries to provincial offices for day to day management and data transfer. However, due to fiscal mismanagement, the

## Challenges in Internet Use of S&T Staff in Rural Communes in An Giang

In 2002, An Giang province started a project to improve the capacity to access the Internet of S&T staff working in rural communes. About 42 points of rural Internet access were established: seven points in communal cultural and post office centres, nine points at post offices of district centres, and 26 points in offices of the People's Committee in the communes. S&T staff working in the communes were trained to use computers and access the Internet by the An Giang University and the Department for Science and Technology (DOST).

The project had an initial total investment of around USD 30,000 from the provincial budget. Of the 114 S&T staff being trained, 109 received club membership and Internet access cards from VNN (each card cost VND 100,000 or around USD 6). According to the IT Center of the provincial DOST, there are now around 40 S&T staff using the Internet in 20 communes and small towns of the province.

Still, there are several constraints. First, the use of email is charged the long distance fee of VND 800 per minute, instead of VND 120 as promised for those with access cards. Second, the access points are available on a very limited basis. Because post offices are closed outside of office hours, 26 People's Committee offices were designated as the Internet access points. But the lack of telephone lines and machines (there are only two telephones for each office) prevents users from accessing the Internet. The machines are available for Internet use only at night, after office hours, when it is not very convenient for people to come. Third, there is a lack of Web-based information in the Vietnamese language, especially information related to science, technology, agricultural economics, and the like. Information relevant to the issues confronting the farmers in the communes is simply not available on the Internet. This seems to be the most difficult problem to surmount in the near future.

(Source: Tran 2003)

program was suspended in 2007. As a separate initiative, the government has started its own website ([www.gov.vn](http://www.gov.vn)) with three functions: to create an electronic database of government activities; to communicate government policies; and to set up a forum for exchanges between government, its agencies, and enterprises and the population at large. The overall aim is to perfect the provision of public services to citizens. This initiative is expected to compensate for the failure of Program 112.

### e-Commerce

According to the Ministry of Industry and Trade (MOIT), by the end of 2004 there were 17,500 enterprises (nearly 20 percent of the total) with websites. By the end of 2007, 38 percent of enterprises had websites. Almost all enterprises have access to the Internet, most via an ADSL connection.

e-Transactions and e-payments have become a popular mode of operation particularly in booking airline tickets. Most enterprises also participate more actively in the e-market and there are several state-run portals to support enterprises in doing e-business. In addition to the national e-commerce portal ECVN ([www.ecvn.com](http://www.ecvn.com)), the MOIT runs a program called TrustVn ([www.trustvn.gov.vn](http://www.trustvn.gov.vn)) to rank the credibility of e-commerce websites. Other e-commerce formats such as business-to-business (B2B), with around 40 e-marketplaces

in 2007, and business-to-consumer (B2C) — [www.25h.vn](http://www.25h.vn) is the most successful case — show steady growth (see 'Village e-Commerce in Bat Trang Village, Hanoi, Vietnam').

The legal framework for doing e-business became more comprehensive with the introduction of a range of regulations in 2007 (see 'Legal and Regulatory Environment for ICTs').

### e-Banking

Among the most active online services is e-banking, which includes Internet banking, mobile banking, home banking, phone banking, and e-payment services. Home banking (payment of bills and money transfer over the Internet) and payment of salaries and pension funds over the Internet were introduced in 2006. According to new rules, pensioner and government officials should get a personal account and a card to receive payment. Ten banks that account for the largest number of automated teller machines (ATMs) are participating in this scheme.

The domestic bank card market grew a staggering 137 percent in 2007 relative to the previous year, as more Vietnamese have switched to using plastic to pay for goods and services. Central Bank figures indicate that commercial banks nationwide issued more than 8.28 million debit and credit cards in 2007, more than double the 3.5 million cards issued in 2006. This means one card for every 10 people. Card transactions now account for 6 percent

### Village e-Commerce in Bat Trang Village, Hanoi, Vietnam

**B**at Trang is a ceramics-producing village where family-based traders and craftsmen use the Internet to engage in e-commerce. The village is about 10 kilometres north of Hanoi. It has 6,692 inhabitants in 1,600 households. The ceramic makers have been using information technology since the beginning of 2000. Initially they used email and the Internet as a cheaper and faster means of connecting with buyers. Then some enterprises built websites to advertise their products to foreign markets. After some successes, other enterprises recognized the advantage of using the Internet. Now 15 percent of households in Bat Trang have computers and all have telephones. And many enterprises are trying to build their own websites with the help of computer companies and university graduates.

To help the enterprises, the Council of the Commune coordinated with a computer company in Hanoi to provide a computer skills course consisting of three two-hour sessions per week for six weeks. The company supplies four computers and charges VND 150,000 (about USD 8) per course per participant. At present, there are 60 learners finishing the course. Many households are also learning English and they have formed groups to hire English teachers.

(Source: Tran 2005)

of the total non-cash payments in the economy. Local debit cards have the biggest market share, making up 93.87 percent of the total number of cards issued by banks, followed by international debit cards (3.65 percent), international credit cards (2.22 percent), and domestic credit cards (0.31 percent). There are currently 32 banks issuing about 130 brands of cards, and 54 percent of them are domestic. There are several card alliances in operation, such as Smartlink, VNBC, and banknetvn.

By the end of 2007, Vietnam had 4,300 ATMs and over 23,000 point of sale (POS) terminals, up from 2,500 and 14,000 in 2006 respectively.

#### Other Online Services and Business

After the boom in 2006, online gaming services have remained on course. This sector has created some concerns among families about young people neglecting their studies due to addiction to online games, and gambling, cheating, and other related crimes. To address the situation, in June 2006 several government agencies (on ICT, culture, the police) issued Joint Document No. 60/2006 regulating the production, supply, and use of online games in the country.

e-Learning is another active online services segment. Vietnam Open Courseware (VOCW, [www.vocw.edu.vn](http://www.vocw.edu.vn)), run jointly by the MOET, VASC Software and Media Company, and Vietnam Education Foundation, is the most notable program.

### EDUCATION AND CAPACITY-BUILDING

Following Decision No. 331/QĐ-TTg (6/4/2004) launching a program to develop human resources for the ICT industry until 2010, and other efforts to pursue more training of ICT

staff<sup>1</sup> up to 2007, the number of personnel with ICT skills has grown significantly. Vietnam has about 35,000 people working in the software industry, more than 20,000 in the content and services industry, and nearly 100,000 in the hardware industry. In addition, there are about 100,000 people working in telecom firms and 90,000 specialized ICT staff working in ministries, agencies, and companies.

There have been some important changes in ICT human resources development, such as ICT training in English by all universities, more focus on ICT training, and changes in the accreditation and degree granting system for ICT, among others. Private universities specializing in ICT training have come into operation in the last two years, such as the FPT University in Ho Chi Minh City. In 2007, there were more than 200 universities and colleges providing ICT training to more than 10,000 recruits per year.

Despite the numbers, the supply of ICT personnel is still lagging behind the demand. In software, for instance, only about 47 percent of demand is being met by training. The quality of training is another big issue, with more than half of the graduates needing to be retrained by firms before they can be properly placed.

Large multinationals are providing additional training and capacity-building. One example is IBM with its KidSmart program providing schools and kindergartens in all 64 provinces of the country with specially designed computers for learning. Around 1,200 teachers have been trained under the program. IBM has also introduced a Service Science, Management, and Engineering (SSME)/IT Services Curriculum (ITSC) to Vietnamese universities in collaboration with the MOET and MOST. Intel is cooperating with US universities to open training facilities and Oracle has started implementing the Oracle Academy program in Vietnam.

## OPEN SOURCE/OPEN CONTENT INITIATIVES

As a result of Decision No. 235/QDD-TTG, which seeks to foster the application and development of open source software (OSS) in Vietnam over a four-year period (2004–2008), many new OSS products have been introduced to users. The MOST has conducted an OSS awareness raising campaign and the OSS Forum is an active movement. Vietnam became a member of Asianux in 2007 and an OSS Center is to be set up in Hanoi. Linux Server 3.0 was introduced around the end of 2007. In addition, another OpenLab was set up in Ho Chi Minh City to do research, testing, evaluation and technical services, training, and packaging of products. One example of an OSS-based effort is a PC operating system costing USD 2. Some local companies are cooperating with Intel to introduce cheap PC-based OSS.

The National Center for S&T Information is creating a database of OSS activities and products. There are more than 30 companies now involved in the supply of OSS-based products and services.

Some government organizations and commercial banks, as well as some schools and universities, have shifted to OpenOffice. However, the impact of OSS in Vietnam is still limited and the rate of development is slow, despite the push by some government agencies.

## ICT RESEARCH AND DEVELOPMENT

State-run R&D is being done on embedded systems, networks, information security, and GIS applications for chip design. Apart from the MOST program that tends to focus on key laboratories and research institutes, R&D is taking place in many ICT faculties and centres in universities.

One of three most notable R&D events in 2007 was the design and creation of the first ‘made in Vietnam’ 8-bit RISC chip SigmaK based on TSMC technology by a research centre of the Vietnam National University (IC Design Research & Education Center, or ICDREC) in Ho Chi Minh City. Thereafter the Vietnam Semiconductor Manufacturing Company launched the ‘energy saving management’ chip VS8801A. This marks the beginning of collaboration in chip-making between local R&D companies and Vietnamese companies overseas. Some attempts to commercialize this R&D product are being pursued in selected markets like Taiwan and the US, which shows that ICT R&D activities are beginning to have a market orientation.

## CHALLENGES

Overall, the development of ICT in Vietnam is unfolding at a steady pace. Thanks to government efforts as well as public-private partnerships, ICT development has a more firm legal basis and institutional policy support, leading to better performance of ICT industries and applications.

But there have been recent setbacks, notably the stoppage of Project 112 aiming to connect all agencies to a single network. The quality of telecom and Internet services is another concern, with Ministry of Post and Telematics’ recent findings that some of the largest providers are providing services of a quality that is below industry standards.

Although in general the ICT picture in Vietnam looks better than before, the notion of ICT as a development enabler is not widespread. There is a need for a change of attitude at all levels and all layers of society to make Vietnam a more open and transparent ICT-friendly society.

Finally, in spite of various efforts to encourage more competition, the mighty monopoly of VNPT remains. In the context of joining the World Trade Organization, Vietnam will have to face the challenge of foreign players demanding a more open domestic market in telecoms as well as in other ICT services.

## NOTE

1. These include Resolution No. 05/2005/NQ-CP promoting socialization activities such as education, culture, healthcare, and sports; the Law on Education passed by the National Assembly in 2005; and Regulation No. 14/2005/QĐ-TTg on the development of private universities.

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