

Big Ambitions in Rapidly Changing World: Azerbaijan

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During its 20 years of independence, the Republic of Azerbaijan has leveraged its position as a key oil and gas center in order to develop strong regional ties while simultaneously utilizing its revenues from these sectors to promote economic diversity. Such diversification has been a crucial part of Azerbaijan's national strategy since 1993. The major goals of the government for the upcoming years are:

- maintaining prudent macroeconomic management and improving trade policies and institutions,
- strengthening Azerbaijan's role as a regional transport corridor and improving the road and highway system within the country, and
- improving the business environment to encourage high growth in non-oil sectors.¹

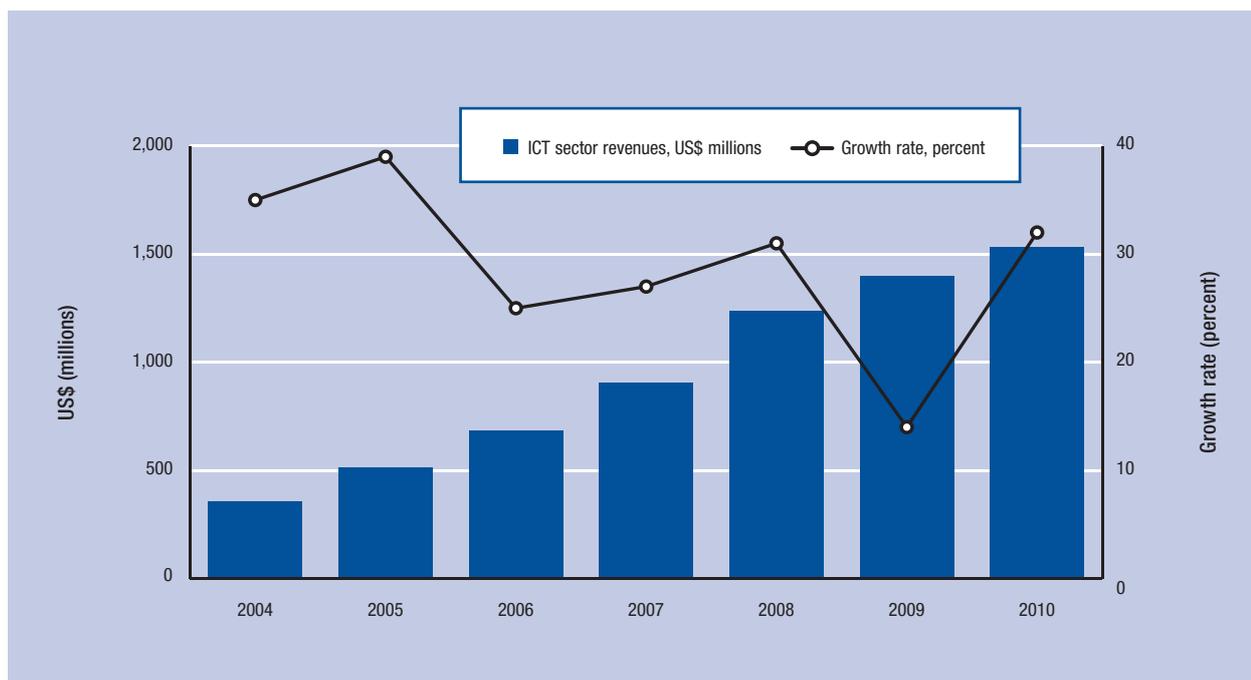
In line with the government's plans for diversification, attracting foreign direct investment (FDI) has been established as a high priority. Accordingly, the government has acted aggressively to create a favorable environment for foreign investment in Azerbaijan. Among the many actions taken by the government in that regard has been to simplify the business registration procedures. In the World Bank's *Doing Business 2011*,² Azerbaijan positioned reasonably well in the rankings with respect to starting up a business, registering property, protecting investors' interests, enforcing contracts, and obtaining access to credit. Progress also has been made with respect to the registration period for foreign companies through benefiting e-service applications. It is worth noting that Azerbaijan has been ranked the most competitive economy among the Commonwealth of Independent States (CIS) countries in both the 2009–2010 and 2010–2011 *Global Competitiveness Reports* published by the World Economic Forum.³

Economic policies carried out over the last decade have resulted in threefold GDP growth in Azerbaijan. Moreover, budget revenues and expenditures increased by more than eight times and strategic currency reserves reached US\$41 billion. Other economic indicators also show a positive trend: the unemployment rate declined to 5.5 percent, the inflation rate decreased to 5.1 percent, and the poverty level dropped to 9.11 percent.

From 2005 to 2010, total investment in Azerbaijan's economy was about US\$74 billion.⁴ Despite the fact that Azerbaijan's economy has cooled from the dizzy days of 34.5 percent growth recorded in 2006, the country has maintained double-digit growth during the years of the global financial crisis. Although growth has slowed in the oil sector, mainly because of lower oil prices in 2009, the non-oil sector has been able to pick up much of the slack, with the information and communication technologies (ICT), banking, construction, and real estate sectors all experiencing substantial growth.

Several state programs in various sectors—including ICT, tourism, construction, and agriculture—gave a

Figure 1: ICT sector revenues and growth rate, US\$ million



Source: State Statistical Committee of the Republic of Azerbaijan.

strong boost to Azerbaijan's economy in 2010. Non-oil economic growth was robust in 2010 at 7.9 percent, compared with 3 percent a year earlier, largely because of significant public investment.⁵ Azerbaijan's key economic goal for the next 10 years is to double its GDP. ICT is expected to play a major role in this projected economic development, both in its own right and by supporting the further development of other economic sectors, such as the oil and gas industry.

ICT AND ECONOMIC DEVELOPMENT

In recent years, the ICT sector has played an increasingly important role in the socioeconomic development of Azerbaijan. In recognition of that important role, the government has identified ICT as one of the priority sectors of the national economy, and has taken significant steps toward the formation of an information society and knowledge economy in Azerbaijan.

The strategic development of ICT in the Republic of Azerbaijan is defined by the National Information and Communication and Technologies Strategy for the Development of the Republic of Azerbaijan (2003–2012),⁶ along with two state programs concerned with the development of ICT and other relevant programs of Azerbaijan. This strategy consists mainly of three essential pillars:

1. liberalization of the telecommunications market and the creation of an effective regulatory mechanism;
2. development of telecommunications infrastructure; and
3. development and deployment of e-government and e-services.

Liberalization of the telecommunications market

The goals of Azerbaijan's ICT liberalization and regulation include the following:

- maintaining compliance of domestic legislation with relevant international standards and the requirements of the World Trade Organization;
- attracting new telecommunications operators to the market and establishing a sound competitive environment for market participants;
- ensuring the efficient, effective, and fair use of a limited number of resources and frequencies; and
- regulating interconnection issues and ensuring the implementation of advanced practices with respect to telecommunications licensing.

The liberalization of the telecommunications market and the introduction of competition have opened up tremendous opportunities for doing business in the ICT sector in Azerbaijan. As a result, and because of the government's support of entrepreneurship in the sector

Table 1: Major ICT infrastructure development indicators

Indicator	2009	2010	2011
Fixed-line penetration (per 100 inhabitants)	16.0	16.2	18.6
Broadband Internet users penetration	10	15	30
Internet penetration (per 100 inhabitants)	41	50	65
International Internet bandwidth capacity (GB/s)	15	40	87
Digital television broadcast (percent of the country's inhabited territory)	30	45	85
Mobile telephony penetration (cellular subscriptions per 100 inhabitants)	86.2	100	110
Computer penetration (computers per 100 inhabitants)	12	15	20

Source: State Statistical Committee of the Republic of Azerbaijan and the MCIT.

and the establishment of a sound competitive environment to ensure the proper development of the market, new fixed and mobile telephone network operators have begun operation. Currently, there are 4 mobile operators, 7 fixed-line operators, and 35 Internet service providers. The same policies have helped attract ICT commodity equipment manufacturers and broadcasting companies to Azerbaijan.

These developments are reflected by the private sector's share of the overall ICT market, which has soared from 67.3 percent in 2003 to 80.0 percent in 2011. Moreover, all of the above-mentioned market players have been very active in investing. As a result, by 2011 ICT-related investments had summed to US\$2.0 billion since 2004, 25 percent of which was in FDI.

Such a high volume of investment inevitably boosted the growth of the ICT sector in general. Azerbaijan has witnessed double-digit growth in the last eight years. During that same period, the income produced by the country's ICT sector increased by 5.3 times. In 2010 alone, ICT generated US\$1.5 billion and the annual growth rate of the sector was 32 percent. Furthermore, the share of the ICT sector in non-oil GDP increased by 7.3 percent.

ICT infrastructure development

ICT infrastructure development is crucial. A necessary first step in maintaining the growth of the ICT sector is attracting FDI and increasing the impact and share of ICT in the national economy. Azerbaijan has made significant achievements in developing fixed telephony; increasing broadband penetration and international Internet bandwidth capacity; and improving its television, radio, and mobile telephony infrastructure (Table 1).

Fixed telephony infrastructure

Over the past decade, Azerbaijan's telecommunications and information technology (IT) infrastructure has advanced considerably, both in its use of modern technology and with respect to its geographic coverage. Azerbaijan still is the only post-Soviet state where all

residential areas are serviced by landline telephony. In one of the major achievements in the development of the country's telecommunications infrastructure, fixed-line penetration reached 18.6 percent by 2011. Moreover, Azerbaijan's fixed-line network has increased from 48 percent digital in 2003 to 100 percent digital in 2011.

Broadband penetration

Azerbaijan has witnessed significant growth in broadband connectivity, and has a current penetration rate of 30 per 100 inhabitants (Figure 2). In order to expand this connectivity, Azerbaijan has adopted a special action plan for increasing penetration and usage of broadband and Internet in 2012 and 2013. These efforts to increase broadband penetration will benefit from Azerbaijan's relatively high level of fixed-line penetration, which provides the basis for fixed broadband connections.

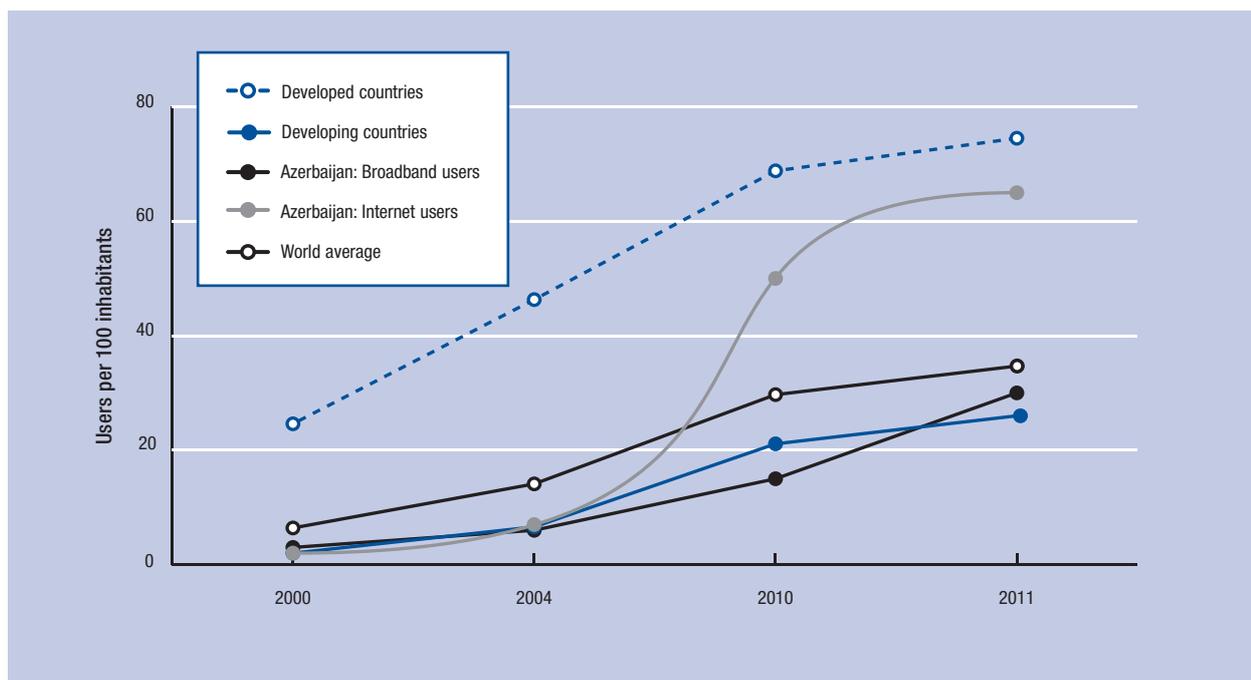
Television and radio infrastructure

Although Internet penetration is becoming more pervasive, television is still the most popular source of information in the country. Currently, there are 25 television and 14 radio channels available in Azerbaijan. Transition from analog to digital television broadcasting is the Ministry of Communication and Information Technologies (MCIT)'s priority and is expected to be completed by the end of 2012. Meanwhile, by the end of 2011, digital television broadcast (a social package of 10–12 channels) was expected to cover 85 percent of the inhabited territory of the country. In addition, plans are underway to launch high-definition (HD) radio services in Azerbaijan in the near future.

Mobile telephony infrastructure

The largest FDI in the ICT sector occurs in mobile telephony (Figure 3), followed by a number of companies with fixed-line operations, Internet, and cable television distribution. In 2007, the public shares in two mobile operators—Azercell and Bakcell—were privatized. In 2009, Azerfon—the country's newest mobile operator—signed a partner market agreement with Vodafone to ensure

Figure 2: Internet users per 100 inhabitants, 2000–11



Sources: Data from International Telecommunication Union; the State Statistical Committee of the Republic of Azerbaijan.

Vodafone's local presence in Azerbaijan. Mobile broadband increased significantly after Azerfon was granted a third-generation (3G) license. Azercell and Bakcell have also recently been granted 3G licenses. Furthermore, mobile operators have begun to consider the implementation of novel fourth-generation long-term evolution (4G LTE) technologies. For the first half of 2011, the number of mobile subscriptions exceeded 10,120,000 and mobile cellular subscriptions per 100 inhabitants reached 110, which is 1.4 times higher than the world average.

E-government and e-services development

Azerbaijan's robust ICT infrastructure not only helps increase the economic competitiveness of the country, but it also enables the efficient provision of government services as well as healthcare, education, social services, and so on. Thus implementation of e-services in different economic sectors has continued to advance and improve. This has also been the case with respect to e-government. Among the e-government services and activities that have been undertaken in Azerbaijan are the following:

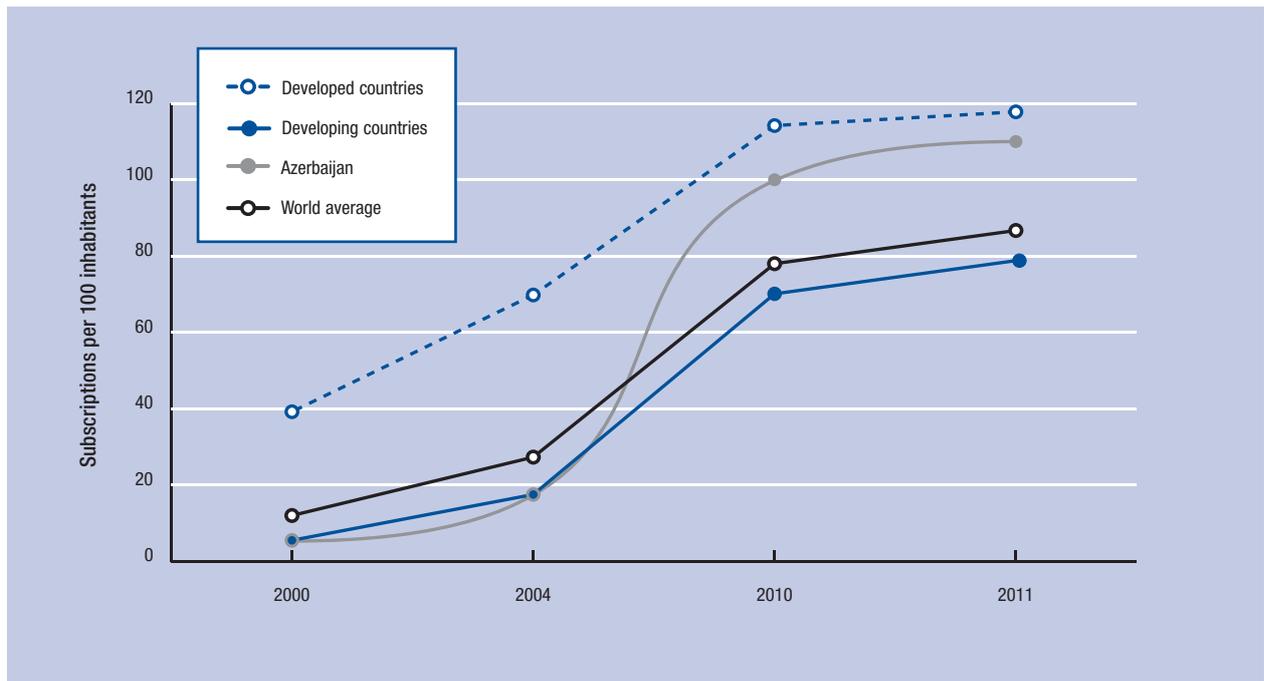
- the establishment of unified, automatized information exchange and management systems in a public management process;

- the development of the state registry of citizens;
- the performance of e-services for taxpayers;
- the registration of entrepreneurship units;
- the introduction of "one-stop-shop" for formalizing and monitoring customs;
- the expansion of automatized systems of migration services;
- the provision of electronic healthcare services; and
- the establishment of an education management information system and the ability to submit applications online for university admissions.

In order to expand this level of development, Azerbaijan has adopted a special action program to support further e-government development in 2011 and 2012.

Out of 20 basic e-services defined by the European Union for citizens and businesses, 8 are already performed in Azerbaijan (electronic submission of tax and customs declarations, electronic submission of applications for university entrance exams, etc.). The number of these services in Azerbaijan has steadily increased. Thus, in the UN's 2010 E-government Survey, Azerbaijan ranked 83rd among 192 states, up from its rank of 89 in the UN's 2008 report; the country was also 68th in terms of e-participation index among 157 participating states.⁷

Figure 3: Mobile subscriptions per 100 inhabitants, 2000–11



Sources: Data from International Telecommunication Union; the State Statistical Committee of the Republic of Azerbaijan.

Improving the business environment: Developing e-applications and combating piracy

Based on a Microsoft solution, the national Electronic Digital Signature (EDS) was recently launched by the MCIT. Through the EDS system, a connection to an electronic payment system is provided in order to ensure the capability of making electronic payments. In addition, an e-government portal was created to organize and utilize electronic services based on the one-stop-shop concept. Implementation of EDS in Azerbaijan is expected to have a positive impact on the development of e-services and the provision of information security. Reflecting Azerbaijan's support for e-government and also the supporting legal environment that has been created, business and financial services are also gradually going online. Two e-payment systems are actively functioning in Azerbaijan and more than 100 companies are now utilizing online payments. However, the majority of business transactions still are carried out in traditional ways, either in person or through phone, fax, or paper-based communications. Nevertheless, the development of electronic services in the country has reached a level that requires integration in a single system under one umbrella. For this purpose, the "X-road" project, which is based on Estonian experience and designed to unite existing information bases and systems built on different platforms, was launched and is expected to be ready in 2012.

In 2011, the MCIT signed a formal agreement with Microsoft to help ensure that all government offices covered by the agreement will run legally licensed software, signaling a new commitment to reduce software piracy throughout the country. The agreement was aimed at addressing the piracy issue in Azerbaijan and fostering awareness of the increasing risks associated with non-genuine software, such as malware and data loss.⁸ By setting a strong example for safeguarding intellectual property rights in the public and private sectors, the agreement will have a positive influence on the country's national competitiveness. The MCIT also supports the anti-piracy program led by USAID that aims to train commercial bank auditors to detect the use of unlicensed software in banks and businesses nationwide. Moreover, the project focuses on the risks that large and medium-sized enterprises face by using pirated software. Under the two state programs for improving the educational system in Azerbaijan, 40,000 computers were supplied with legally licensed software. It should also be noted that local software developers and integrators have made a significant contribution to the improvement of content and system management processing in education.

LATEST DEVELOPMENTS IN THE ICT SECTOR

The ICT sector is growing rapidly in Azerbaijan. The latest developments are particularly evident in the country's

tariff policies, the expansion of its ICT industry, and its satellite program.

Tariff policy

Growing competition has increased end user/consumer benefits and the level of satisfaction in the services received, in terms of both quality and price. Tariffs for many services have dramatically decreased over the last few years. For example, mobile services tariffs have decreased by 30 percent, while the price for a 1 Mb/s Internet connection has decreased by 50 percent. Consequently Azerbaijan managed to move from rank 99 to 53 among 165 countries, in terms of the ICT Price Basket indicator elucidated by International Telecommunication Union (ITU). The country was also ranked in the top 10 countries drawing ICT prices down.⁹

The national ICT industry and its expansion into regional markets

Azerbaijan was one of four republics that manufactured computers and computer chips in the former Soviet Union. However, the collapse and economic disintegration of the Soviet Union resulted in the total devastation of Azerbaijan's ICT industry in the early 1990s.

The industry is now experiencing a re-birth. Along with the development and enhancement of ICT infrastructure, the government of Azerbaijan devoted a significant amount of attention to the development of IT applications and products. In addition to providing fiscal and monetary incentives, the Azerbaijani government has also been an efficient market driver of IT usage and adoption. Because of its transparent and streamlined public procurement processes, all IT companies have equal access to public resources. Such a situation has enabled them to produce competitive products and, by doing so, to open up regional and international markets.

The ICT sector in Azerbaijan has witnessed growth not only in services but also in the production of hardware and software products. In just the last three years, exports of IT products have increased four times. At least 16 large- and medium-sized companies in Azerbaijan produce computer hardware, making up 60 percent of the hardware available on the local market. In addition, some 27 companies, most of them small- and medium-sized enterprises, assemble and manufacture telecommunications and radio equipment. There are also more than 40 companies developing software applications and systems integration and providing web-hosting and web-designing services.¹⁰ The number of people involved in the ICT sector is about 60,000, which is 4.5 percent of total domestic employment in Azerbaijan. Currently the IT companies of Azerbaijan are not only participating in national projects but they are even engaged in the South Caucasus region and Central Asia. Today computers and ICT equipment manufactured in Azerbaijan are being exported to the countries of the region. Despite the

increase of domestic ICT capacity, however, Azerbaijan has considerably increased its import of ICT-related products to meet its major requirements for telecommunications equipment, computers, and computer equipment and electronic devices.

FDI in Azerbaijan's ICT sector

At present, 10 of the top 20 ICT companies in the world—Microsoft, Cisco Systems, Hewlett Packard, IBM, Apple Computer, Intel, Oracle, Google, Nokia-Siemens Networks, and Ericsson—are operating in Azerbaijan and actively participating in the implementation of various projects. The operation of such large and world-renowned companies in Azerbaijan is a result of the business- and ICT-friendly environment created by the government, and is a testament to the potential these companies perceive as existing in Azerbaijan in the ICT sector.

The satellite program

Another remarkable fact in the development of the Azerbaijan's ICT infrastructure is its advanced satellite program under the direction of state-owned Azercosmos OJSC. The first step in that program will be the planned launch in 2012 of Azerspace-1—the region's first communications satellite. This satellite will upgrade the quality of television broadcasting and telecommunications not only in Azerbaijan but throughout the Eurasia and CIS regions, and will lead Azerbaijan to becoming a major relay site for signal transmission between Europe and Asia. The satellite's footprint will cover Eastern Europe, Central Asia, and Africa. Azerbaijan itself is going to use only one-fourth of the Azerspace-1 capacity, while the rest will be available for lease. Azercosmos plans to launch a second satellite, Azerspace-2, in 2015, which will further expand Azerbaijan's satellite communications capacity, and to launch a remote sensing satellite to low Earth orbit in the future. This remote sensing satellite will enhance and accelerate Azerbaijan's capacity in the areas of environmental protection, agriculture, topography, and cartography, as well as in national security and related areas.

SUCCESS FACTORS

The Government of the Republic of Azerbaijan, represented by the MCIT, is a driving force for ICT development. The importance of the government's role can be better understood in the context of Azerbaijan's post-Communist transition, when it was coping with relatively weak market institutions and a still-emerging business sector. The government, in response to current global trends, was quick to realize the need for policy and strategic leadership going beyond just technology management. Adopting the National Strategy indicated the transition from the traditional view of ICT as an aid in day-to-day operations to viewing it as an important

Table 2: Azerbaijan in the 2010–2011 Networked Readiness Index

Pillar	Rank	Pillar	Rank	Pillar	Rank
Market environment	78	Political and regulatory environment	79	Infrastructure environment	79
Individual readiness	67	Government readiness	33	Business readiness	83
Individual usage	69	Government usage	56	Business usage	76

Source: World Economic Forum 2011.

vehicle in overall economic development. In this regard, the MCIT's leadership has operated not only as an implementer and provider of public policy but as a driving force and initiator, by promoting the role of ICT at all levels and raising awareness of its substantial benefits in both the public and private sectors.

Of course, there is still a lot to be done and some serious challenges impede the country's ICT sector development. Nonetheless, Azerbaijan has made a considerable—and productive—effort to recognize and address those problems through a long-term strategic approach to ICT development and deployment. Another important factor in its success lies in the financial domain. Rich oil and gas resources have provided Azerbaijan with substantial revenues that, in turn, have created a solid financial basis for ambitious ICT development projects. However—as demonstrated by the lack of success by other states with significant revenues from natural resources and other factors—economic wealth does not guarantee a productive outcome. Sound strategy and good management and leadership are critical to success. The ICT policy success in Azerbaijan can be explained by the following factors:

1. the strong political support of the MCIT from the Government of Azerbaijan, thereby ensuring that it has enough authority to enable it to perform its strategic management role;
2. sufficient and appropriate authority of the MCIT with respect to the allocation of scarce resources;
3. the ability of the MCIT to successfully integrate its organizational strategy with various relevant national policies and coordinate its activities with other actors (public agencies, donors, businesses, nongovernment organizations, etc.); and
4. the ability of the MCIT to inspire other actors (public agencies, donors, businesses, nongovernment organizations, etc.) to appreciate ICT development and acquire additional support.

All relevant state programs provide the MCIT with a high level of both responsibility and authority to serve as the focal point for the country's ICT development. At the same time, the MCIT's leadership is actively involved in national, regional, and international forums and policy discussions, and is trusted by both Azerbaijan's executive and legislative leadership. This trust, as well as appropriate institutional arrangements, enables the MCIT

to perform as a strategic leader in the field of ICT development. The multiple initiatives and projects created and led by the MCIT demonstrates and confirms its important role in the ICT sector.

It is also worth mentioning that the MCIT—as a leading agency responsible for implementation of important state programs and projects mentioned in this chapter—has been provided with enough resources for it to fulfill its responsibilities. It defines and manages these resources and can then further allocate them where appropriate.

Another important factor of its success is the ability of the government to be engaged in open debate with civil society and to provide clear and readily available methods for receiving feedback. Communicating the government's set priorities and strategies on all levels is crucial because there are multiple actors involved and all need to be clear on the implemented public policies, each of their roles, and the potential benefits. This also has been a success factor in Azerbaijan, where the MCIT has undertaken substantial efforts to promote public dialogue, raise awareness, and engage in public relations.

Transparency and openness to cooperation also has helped to attract international donor organizations and companies to actively participate in the government-initiated programs.

CHALLENGES

Despite the above-mentioned achievements, there are some serious challenges that need to be addressed in Azerbaijan. These challenges can be summarized as follows:

1. individual and business readiness lag behind public policies,
2. a disconnect is evident between the research and business communities,
3. general institutional problems remain, and
4. individual and business readiness continue to be an issue.

The 2010–2011 Networked Readiness Index ranked Azerbaijan 77 out of 138 countries. Table 2 summarizes the major rankings, organized by market, political, and infrastructure environments and individual, business, and government readiness and usage. According to the

World Economic Forum, Azerbaijan's business usage and readiness scores are the lowest of these various rankings.

The problem is that many Azerbaijanis still access the Internet from shared connections at their workplaces, at universities, or in Internet cafés. The rate of computer ownership is low and Internet usage at home is moderate. Currently, almost half of the computer market is served by local assemblers importing parts from their Asian partners. In order to increase the number of PC owners and also to enhance the use of licensed software, the MCIT, in cooperation with Ministry of Education, HP, and Microsoft, launched a joint project called *National PC*.

The National PC project is a successful public-private partnership that provides computers at a discount and is being implemented well in many parts of the country. The total cost of a computer together with the software offered under the project is as much as 40 percent lower than market prices. Owing to successfully implemented ventures such as National PC, PC penetration in Azerbaijan has increased by 6.5 times during the last five years.

Along with the substantial growth of PC use in both the public and the private sectors is a corresponding demand for accessible and sophisticated software systems. Investment by new companies in Azerbaijan and the enhancement and growth of e-services have increased the importance of IT specialists with backgrounds in engineering, management, and marketing. However, there is a lack of qualified professionals who possess the necessary software development skills. According to *The Global Competitiveness Report 2011–2012*, Azerbaijan ranked 105th in its reliance on professional management, 125th in the quality of its management schools, and 99th in terms of math and science education.¹¹ These indicators demonstrate the potential seriousness of a problem that would certainly undermine other achievements if not resolved. Moreover, in the same report, an inadequately educated workforce is identified as the 6th major problem among Azerbaijan's top 15 problematic factors for doing business—following corruption, access to finance, tax regulations, inadequate supply of infrastructure, and tax rates.

The good news is that these challenges are not being ignored but have been recognized and appreciated by the government. In order to address them, in 2007 the MCIT, in alliance with local ICT entities, initiated the Human Resources Foundation for the Development of ICT. Thus far it has provided scholarships to dozens of young boys and girls enabling them to study ICT in a number of universities worldwide. It is expected that future high-capacity services, including user-generated content and cloud computing, will provide job opportunities for these skilled graduates.

Furthermore, Azerbaijan leads the region in the performance of an initiative for increasing teacher and student access to computers. Almost all of the schools are computerized and 40 percent of them have access to broadband Internet. By 2012 the country's secondary school connectivity to broadband Internet is expected to reach 100 percent. PC penetration in secondary schools has now reached 1 PC per 20 pupils.

Disconnect between research and business

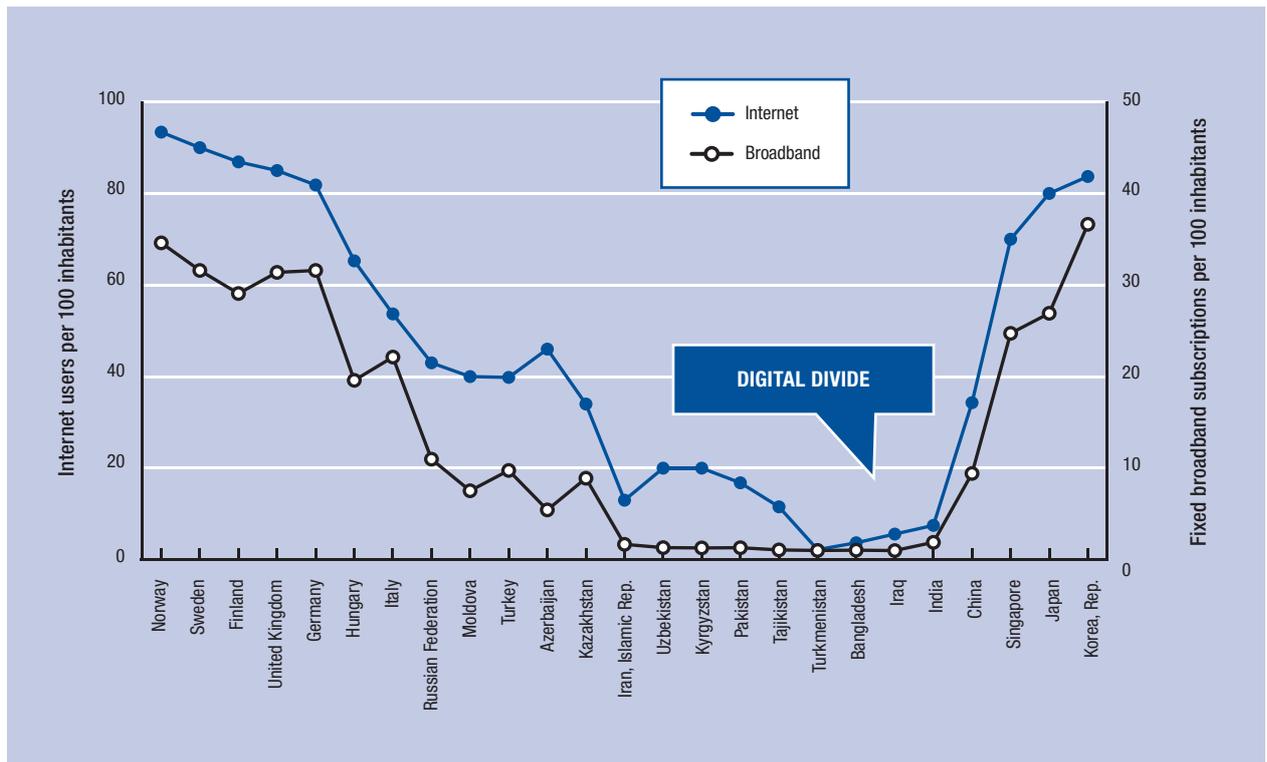
The disconnect between the research and business communities in Azerbaijan has led to the country's loss of competitive standing in this regard. According to *The Global Competitiveness Report 2011–2012*, Azerbaijan ranks 106th in terms of university-business collaboration in R&D, which is one of the worst rankings of the country with respect to its overall competitiveness ranking.¹² Moreover, the shortage of high-skilled technical labor as well as high custom duties creates excessive obstacles for the increase of export-oriented products. In order to solve this problem, ensure a sustainable ICT sector in Azerbaijan, and create alternative income sources as well as to increase attractiveness of local markets for foreign investment, the MCIT developed the concept of the Regional Innovation Zone. The goals of the Regional Innovation Zone are the following:

1. to accelerate the application of technological innovations in the small- and medium-sized enterprises;
2. to develop and train human resources and to create an IT university;
3. to evaluate the opportunities for the creation of an international information resources center (a data center);
4. to increase new capital investment in Azerbaijan as well as FDI; and
5. to promote ICT export in Azerbaijan.

Institutional issues

As previously noted and recognized in respected international reports, Azerbaijan's economy has been flourishing and expanding rapidly. Nevertheless, the country still faces major development challenges emanating from various institutional problems. These problems cause restrictive regulations, limited access to finance, and monopoly and taxation issues; they also indirectly affect the development of the ICT sector. Finding the solution to these obstacles has always been a priority for the society. Thus, the Azerbaijani government has continually been implementing institutional reforms. In order to further develop the goal of institutional reform, the Law on Combating Corruption was adopted in 2004 and various independent regulators established across different sectors. ICT development will be a new step in addressing these issues and, through the development

Figure 4: Internet and broadband penetration in the Eurasian region, 2010



Source: International Telecommunication Union.

of e-government services, will contribute positively to the necessary institutional reforms.

A PATH FORWARD: FROM NATIONAL TO REGIONAL DEVELOPMENT

During Azerbaijan's next stage of ICT development, the main target of ICT policy is the elimination of digital divide, as exemplified by Figure 4. This figure demonstrates that the divide is not on the national level but has broader dimensions and is between various social layers and geographical areas. To address this issue many elements must be tackled, including raising the development level of broadband technologies to that of the developed countries; ensuring the establishment of an information society; increasing the application level of electronic services; and jointly utilizing the existing potential of regional states along with the country's resources in the regional projects related to ICT development, thus allowing it to gain from the synergy of collective and coordinated efforts.

For this purpose, for 17 years Azerbaijan has hosted the annual BakuTel International Exhibition and Conference. BakuTel has been a venue for the regional IT industry, promoting new contacts and cooperation, with more than 10,000 specialists attending the exhibition each year. The 17th BakuTel Exhibition, held in November 2011, was on an even larger scale than

previous events. It brought together representatives of 29 countries with 18 national pavilions and 250 companies. BakuTel provides an opportunity to demonstrate the newest solutions and the most advanced technologies and is an event that brings together Azerbaijan's old and new partners from the global scientific and business communities. And because it attracts leading businesses from the global ICT market, this annual event also opens up investment horizons in Azerbaijan's ICT sector.

Because of its role as the regional transportation hub and its leadership in the field of ICT development, and because it has one of the foremost economies in the region, Azerbaijan is a driving force in the Trans-Eurasian Information Superhighway initiative. This project will create a communications backbone spanning the region, with multiple international access points and numerous points of connection among national networks. The network will cover many countries and as much of the population as possible with the shortest route, and will be designed in a way that allows for expansion later. It must be able to reach various international connectivity points, and its designers will have to establish more than one trans-Caspian route to ensure intraregional connectivity and resilience/redundancy in case of interruption.

After a year of complex negotiation and high-level collaboration, in October 2009 the 64th Session of the UN General Assembly adopted the Resolution

on Building Connectivity through the Trans-Eurasian Information Superhighway.¹³ The resolution welcomed the initiative and the readiness of Azerbaijan to coordinate regional efforts aimed at realizing this initiative. With the leadership of the MCIT, the Secretariat of the Project was created with initial input from Aztelecom, Turktelecom, China Telecom, Rostelecom, and Kaztranscom; in June 2011, the advisory meeting was held. Going forward, the group will take necessary steps to provide further detail on the required infrastructure investment, design the operating model, and ensure the project's economic feasibility.

The information highway is expected to bring broadband connectivity to the region, allow intra-regional/continental networking, and strengthen international trade and socioeconomic development. The countries of the region will derive significant benefits from the improved infrastructure. International traffic will need to become more balanced—that is, it will need to exhibit an almost equal distribution of facilities for providing and consuming Internet and broadband. It will need to cater to increased capacity demand as the Internet “roads” (spectrum) get more and more congested, Internet traffic continues to multiply, and the supply of high-bandwidth Internet continues to have difficulties keeping up.

A new high-capacity fiber optic cable system, the Europe Persia Express Gateway (EPEG), is expected to play a crucial role in expanding connectivity in the whole region. Azerbaijan will participate as both a primary and a reserve transit route in the project, with one of Azerbaijan's leading communication companies, Delta Telecom, along with companies from the United Kingdom, Russia, Iran, and Oman. The system will pass from Frankfurt across Eastern Europe, Russia, Azerbaijan, Iran, and the Persian Gulf to Barka, in Oman. It should be noted that Delta Telecom has been placing Google's servers in Azerbaijan, leading it to become a regional exporter of Internet services.

By strengthening regulatory frameworks and embarking on strategic initiatives to expand domestic and international connectivity while improving citizens' capacities to access and utilize broadband, Azerbaijan has the potential to create an infrastructure that supports its development of the knowledge-based economy and that helps diversify its economy. Maintaining its legacy of the historical Silk Road, Azerbaijan continues to play its traditional role as a transit country for a number of emerging opportunities for the development of the region.

LESSONS LEARNED

The Republic of Azerbaijan—a post-Soviet nation with an emerging resource-based economy—has been thriving, gaining its competitiveness in the global market despite all the challenges it has faced since achieving independence in 1991. The country's rich hydrocarbon resources are a mixed blessing. On the one hand, they have

brought additional revenues and economic growth; but on the other hand, they have placed the country at risk of so-called resource dependence. However, Azerbaijan is in the process of addressing and overcoming these challenges by diversifying its economy for the long term through its ICT sector.

International experts expect that domestic and regional ICT projects—carried out in accordance with the programs and strategies adopted by the Azerbaijani government—along with the sector's growth rate, will establish the economic performance of Azerbaijan's ICT sector as equal to that of the oil-gas sector by 2025, with Azerbaijan serving as a regional ICT hub.

Thus Azerbaijan represents a useful case study and possible model for other emerging economies and natural resource-based economies willing to put in place national ICT development strategies to help drive long-term growth and competitiveness.

The experience of Azerbaijan in promoting the rapid development of the ICT sector suggests that it is crucial to have in place the necessary fundamentals in order to attract more FDI and to develop a domestic private sector capable of further investment in ICT. Other countries that wish to learn from Azerbaijan's experience should remember the country's gradual change with respect to legislation and policies in the areas of trade and ICT liberalization, human resource development, and facilitating broader access to technologies, while maintaining political and macroeconomic stability. Moreover, in the case of the Republic of Azerbaijan, government has played a critical role as the strategic promoter and supporter of the ICT sector. Through the MCIT as the responsible focal point, which the government provided with sufficient resources and authority, the Azerbaijani government has developed and implemented sound long-term policies and made all sector stakeholders aware of their important roles. Those countries wishing to utilize Azerbaijan as an appropriate model for the development of their own national ICT sector should adapt and apply the lessons learned from Azerbaijan's own experience to fit their own unique political, economic, and social environments.

NOTES

- 1 World Bank 2010a.
- 2 World Bank 2010b.
- 3 World Economic Forum 2009, 2010.
- 4 See the State Statistical Committee of the Republic of Azerbaijan.
- 5 IMF 2011.
- 6 The National Information and Communication and Technologies Strategy for the Development of the Republic of Azerbaijan (2003–2012) is available at <http://unpan1.un.org/intradoc/groups/public/documents/untc/unpan018110.pdf>.
- 7 UNPAN 2008.
- 8 BSA 2011.

- 9 See ITU 2011. This index is a tool used in monitoring the affordability of ICT services. The statistics compare 2008 and 2010 tariffs on fixed-telephony, mobile-cellular, and fixed-broadband Internet services.
- 10 Forthcoming report by Kalba International, Inc. working with infoDev, *Assessment of the Broadband Market and Connectivity Gaps in Armenia, Azerbaijan and Georgia*.
- 11 World Economic Forum 2011, pp. 106–07.
- 12 World Economic Forum 2011, pp. 106–07.
- 13 UN General Assembly 2009.

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