**ECONOMIC AND SOCIAL COMMISSION FOR WESTERN ASIA (ESCWA)**

# NATIONAL PROFILE OF THE INFORMATION SOCIETY
# IN QATAR

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# Introduction

Located in the Middle East, Qatar projects from the Saudi Arabian mainland with a 60 km land border. Saudi Arabia is to the west; Qatar faces Iran across the Persian Gulf to the east. Waters of the Arabian Gulf surround the majority of the country. It is south of Iraq and north of the United Arab Emirates.

The Qatari peninsula extends northward covering an area of approximately 11,572 sq. km.,[1] and the country includes a number of islands, reefs, and shoals in the coastal waters off the peninsula. Qatar is small in size, but its growing influence extends well beyond the Gulf region.[2]

Renowned for its safe and secure environment, pristine beaches, dramatic sand dunes, and rapidly developing infrastructure, Qatar is realizing its far-reaching visionand well-planned strategies.

Qatar's rapid economic growth has made it one of the wealthiest countries in the world, as measured by GDP (PPP) per capita, which reached a record level of QAR 212,199 in 2009.[3] The overall GDP at current prices has been estimated at QAR 357.86 billion in 2009. The residing population reached approximately 1.69 million[4] that year.

The economy continues to grow and has become one of the fastest-growing economies in the world, partially due to the rapidly expanding oil and gas sector and related industries. Qatar continues its efforts to diversify its economy—earnings from the non–oil and gas sector overtook the oil and gas sector for the first time in 2009, and also the gas sector was the single largest contributor to the economy,[5]surpassing oil.

Qatar began its path toward developing a sophisticated information society in 1987 with the creation of the Qatar Public Telecommunications Corporation, which became Qatar Telecom (Qtel) in 1998.[6] In 2002, the ICT committee was established. Qatar's aims to fully exploit ICT to become a world-leading knowledge-based economy were further accelerated in 2004 with the launch of ictQATAR, the Supreme Council of Information and Communication Technology. ictQATAR was created by the DecreeLaw No.(36)of 2004. It has been vested with two primary authorities:

- As the country´s independent regulator, protecting consumers and businesses from unfair practices as Qatar transitions to a competitive telecoms market
- As the government body that nurtures innovative technologies to benefit those who live and work in Qatar, while ensuring that everyone has the necessary skills and means to utilize the technology

Within the short span of six years, ictQATAR has achieved significant milestones in ICT market maturity, which has led to further economic growth and competition, enhanced public services, and enriched quality of life.

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[1] www.qsa.gov.qa
[2] www.foreignpolicydigest.org, www.ameinfo.com, www.thepeninsulaqatar.com
[3] www.gsdp.gov.qa
[4] www.qix.gov.qa
[5] Qatar Economic Review 2010, Qatar National Bank
[6] www.qtel.com.qa

# THE ROLE OF THE GOVERNMENT AND ALL STAKEHOLDERS

*"We connect people to the technologies that enrich their lives, drive economic development, and inspire confidence in our nation's future."*[7]

## A. NATIONAL INFORMATION SOCIETY POLICIES AND E-STRATEGIES

Serving the broader ambitions of the Qatar National Vision (QNV) 2030, the2004 EmiriDecree established the Supreme Council of Information and Communication Technology (ictQATAR) with a mandate to become boththeregulator and the enabler of the ICT sector. After making its vision and mission publicly known in May 2005, ictQATAR embarked on its plan of fulfilling the key objectives of the country's ICT strategy.

A second comprehensive strategic ICT Plan was developed in 2010 to guide the implementation of the national ICT strategy and its supporting initiatives for the next five years. Five thrusts represent the key prioritiesin enabling Qatar to become a leading knowledge-based economy. There are 11 national ICT programs comprising several projects that support the five thrusts and ensure the success of the strategy. An overview of each of the five thrusts and their supporting programs is as follows:

TABLE 1: OVERVIEW OF STRATEGIC THRUSTS, NATIONAL PROGRAMS AND MISSIONS

| THRUSTS | NATIONAL PROGRAM | MISSION |
|---|---|---|
| *Thrust 1* Improving Connectivity: Ensuring the deployment of an advanced and secure infrastructure | ICT Infrastructure | Develop a ubiquitous, world-class, high-speed ICT infrastructure that: <br> - is open access; <br> - provides national and international connectivity; <br> - is affordable |
| | Modernizing Legal and Regulatory Framework | Enhance the legal and regulatory environment in Qatar to ensure a business-friendly marketplace that attracts ICT deployment, investment and innovation, and consumer and environment protection |
| | Cyber Safety and Security | Ensure a safe and secure cyberspace, improving digital confidence for all Qatari constituencies |
| *Thrust 2* Boosting Capacity: Enhancing digital literacy and developing the skills to enable innovation | Digital Inclusion | Develop an ICT-skilled population whose members share equal access to technology and have equal opportunities to succeed in a knowledge economy |
| | ICT Human Capital | Foster development of a local talent pool of next-generation ICT workers to support the growth of the ICT sector in Qatar |
| *Thrust 3* Fostering Economic Development: Creating an environment for an innovative and vibrant ICT industry | Innovation and Entrepreneurship | Grow an ICT professional network to connect people, businesses, research institutions, and industry, creating a collaborative environment promoting innovation |

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[7]www.ict.gov.qa

| THRUSTS | NATIONAL PROGRAM | MISSION |
|---|---|---|
| | Digital Arabic Content | Drive the development of an ecosystem in which innovative companies can thrive and pioneer the provision of local digital content for the region. |
| *Thrust 4*<br>Enhancing Public Service Delivery: Ensuring the use of innovative applications to improve the delivery of public services | Second Generation i-Gov | Enhance efficiency of the government, develop new ways for interacting with and serving members of society, and increasing the transparency of government decision-making processes |
| *Thrust 5*<br>Advancing Societal Benefits: Leveraging ICT to improve ways society and government provide education, healthcare, and services to Qatar's people | e-Education | Build ICT capabilities to enable students, teachers, and schools to realize their full potential and contribute to the development of a 21st-century education system in Qatar |
| | e-Health | Enable health institutions and care providers to benefit from ICT, facilitate access to up-to-date medical knowledge and accurate patient information, and contribute to the development of healthcare services that are even more sophisticated, timely, affordable, and efficient |
| | Internet and Society | Monitor the impact of developments online and their impact on society |

Tremendous maturity in all realms of the ICT market in Qatar has been observed in the recent past. Numerous efforts to spur economic growth and competition, enhance public services, and enrich society through ICT reached significant milestones. Summary of information on Qatar's ICT strategy is presented below.

TABLE 2: SUMMARY OF STRATEGY-RELATED INFORMATION

| | |
|---|---|
| ICT strategy exists | Yes |
| Year of adoption | 2005 |
| Government agency in charge | ictQATAR |
| Pace of implementation<br>*(Excellent/ Good/ Average/ Limited)* | Excellent |

B. PUBLIC/PRIVATE PARTNERSHIP (PPP) OR MULTI-SECTOR PARTNERSHIP (MSP)

ICT strategies are implemented through participatory partnerships with major stakeholders in Qatar including the government sector, private sector, and regional/international organizations. ictQATARapplies comprehensive governance structures to manage the different programs of the national ICT strategy.

Mada, Qatar's Center for Assistive Technology, is a prime example of a successful public/private partnership in Qatar. It offers a range of tools, software, and services to help people with avarietyof physical and learning difficultiesimprove their capacities to interact with society.

The center is governed by ictQATAR, Qatar's two telecommunications operators (Qtel and Vodafone Qatar), Microsoft,Shafallah Center for Children with Special Needs and Qatar National Bank. This public/private collaboration enables Mada to be driven by national policy while benefitting from the expertise of industry leaders that are shaping the ICT infrastructure in Qatar.

Since 2010, Mada has already helped more than200 people by assessing their needs.Mada has also trained more than 100 other individuals in identifying and using appropriate solutions for people with various disabilities.

ictQATAR is also partnering with the Ministry of Labor and various private companies to implement a virtual office environment (VOE) model to allow more people to work from home, particularly those who have physical limitations or domestic responsibilities.

In 2010, ictQATAR completed a study detailing how technology can allow more people to work from home. The study identified specific jobs and responsibilities that could be conducted through a VOE model. From the resulting analysis of those arrangements in five sectors (oil and gas, government, banking, health, and telecommunications), ictQATAR is implementing a one-year pilot project working with a range of stakeholders to test the VOE concept—providing the infrastructure, training, and support to allow for effective work-from-home arrangements.

Based on the results of this pilot effort, the Ministry of Labor will explore changing existing labor laws and policies to allow for full-time e-work, in addition to the recent policy changes implemented to enable part-time e-work.

Through a collaboration between the Ministry of Municipality and Urban Planning and ictQATAR, free wireless Internet is provided in major public parks. Read more about the iParks program on page 8.

## C. ROLE OF NON GOVERNMENTAL ORGANIZATION

Qatar recognizes the important role of NGOs and civil society in further enhancing ICT usage and adoption to drive economic development and the country's continuing evolution intoa knowledge-based society. Government's ICT champion, ictQATAR, works very closely with a number of these organizations.

One of ictQATAR's key partners is Qatar Foundation for Education, Science and Community Awareness. The foundation's mission is to prepare the people of Qatar and the region to meet the challenges of an ever-changing world, and to make Qatar a leader in innovative education and research. ictQATAR collaborates with Qatar Foundation on education programs, research and development, and community development.[8]The Qatar Science and Technology Park (QSTP), part of the Qatar Foundation, serves as an incubator for start-up companies and hosts science- and ICT-based companies from around the world. QSTP focuses on four major areas—energy, health, environment, and ICT.

## I.    ICT INFRASTRUCTURE

### A. MARKET STRUCTURE AND REGULATORY LANDSCAPE

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[8] The Government's Role in Promoting ICT Research (www.ict.gov.qa)

Qatar continues to enhanceits legal and regulatory framework to meet the growing needs and challenges of the ICT marketplace. With the issuing of the second fixed license in Qatar to Vodafone Qatar in April 2010, ictQATAR has completed the second major phase of liberalization of its telecommunications sector.

Qtelwas the first major telecommunications provider to offerboth mobile and fixed services, but now Vodafone Qatar offers both as well, enabling consumers, businesses, and government customers to choose between providers for a full range of services. Furthermore, Vodafone Qatar will also be able to provide converged services involving both mobile and fixed networks such as fixed/mobile data packages.

TABLE 3: CORE ICT SERVICES & MARKET STATUS

| ICT Services | Market Status |
|---|---|
| Mobile services | Duopoly |
| Fixed-line services | Duopoly |
| Internet services | Duopoly |

## B. PENETRATION OF ICT SERVICES

Growth in Qatar's telecommunications market continues at a steady pace. The fixed-line penetration rate bucked global trends by further increasingin 2010. From 2008 to 2010, fixed telephone line subscriptions increased 12 percent, mobile subscriptions increased 63 percent, fixed Internet subscriptions grew 45 percent, and fixed broadband subscriptions rose 55 percent.[9]

The successful collaboration between ictQATAR, telecom operators, ICT companies, the public sector, and NGOs in advancing the growth and maturation of the ICT market and services is evident from the growing penetration rates of key ICT services in the following table.Competition created by market liberalization, reducing prices of hardware and services, and free Internet access at public parks also contribute to the significant increase in ICT adoption and usage throughout Qatar.

TABLE 4: PENETRATION RATES OF TELECOMMUNICATIONS SERVICES, 2008–2010

| ICT ServicesIndicator[10] *(Subscription based)* | 2008 | 2009 | 2010 |
|---|---|---|---|
| Fixed telephone lines per 100 inhabitants | 17.11 | 17.65 | 18.20 |
| Mobile cellular telephone active subscriptions per 100 inhabitants | 92.00 | 119.43 | 142.25 |
| Fixed Internet subscriptions per 100 inhabitants | 7.46 | 8.63 | 10.28 |
| Fixed broadband subscriptions per 100 inhabitants | 6.71 | 8.13 | 9.85 |

PC penetration rates across the mainstream population (excluding the transient labor population)reached 85 percent in Qatar in 2010, an increase of 31 percentage points from 2008.[11], However, when considering the overall population (including the transient labor force), computer penetration in 2010 stood at 72 percent, a substantial increase from 32 percent in 2008. The gap between penetration rates of the overall and mainstream populations is due to the significantly lower rates of PC access among the transient labor

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[9,10] ictQATAR, ITU database

[11] Qatar's ICT Landscape 2011 (www.ict.gov.qa)

force.[12]Household-level PC penetration[13] continued to increase in Qatar, from 71 percent in 2008 to 89 percent in 2010.

## C. INITIATIVES/PROJECTS FOR ICT INFRASTRUCTURE AND DEVELOPMENT OF NEW SERVICES

Investment in infrastructure will increase steadily over the next few years. As more companies enter the market, competition for customers will intensify as these providers offer new and innovative services.

On top of the already-existent, strong ICT infrastructure, Qatar continues to move forward with investment in its state-of-the-art high-speed broadband network, its first communications satellite, and submarine cables. These projects will be supported by a modernized regulatory framework to ensure competitionand stimulate demand for services and bandwidth.

Qatar established a joint investment with Eutelsat to build, launch, and operate Es'Hail,[14] a high-capacity communications satellite that will serve the entire MENA region with enhanced access to and quality of communications services. Qatar Satellite Company has been established to lead initiatives related to satellite infrastructure and communications.

## D. ICT CONNECTIVITY

ictQATAR is currently implementing a number of initiatives to ensure that national broadband connectivity will support programs such as e-Health, e-Education,and e-Inclusion, among others. It is rolling out a single ICT backbone, the National Government Network, which will connect all government entities to each otherby 2015. The network will enhance the efficiency of government operations and services and facilitate dissemination of information and exchange of documents. The aim is to connect all education institutions, libraries, government institutions and information points, museums, and community centers. A physical national network will gradually grow to encompass other areas, such as universities, vocational centers, and small and medium enterprises (SMEs).

In addition tothe strong ICT backbone, ictQATAR is committed to developing apopulation whose members have the necessary ICT skills to succeed in a knowledge economy on an equal basis. The Digital Inclusion program aims to bridge the digital divide in Qatar by enhancing the ICT readiness and usage of all members of society, across all abilities, ages, genders, ethnicities, and income levels.

## E. INTERNET INFRASTRUCTURE

In line with Qatar National Vision 2030,as expressed in the social and economic development pillars, Qatar is currently facilitating the creation of a fiber-to-the-home (FTTH) network, with public and private investment, in order to provide high-speed connections to households and businesses. It is estimated that within the next five years, this network will replace many of the existing copper connections.

TheQatar National Broadband Network (Q.NBN) Company has been established with a mandate torollout and rapidly deploy a nationwide high-speed and open FTTH network by 2015. Asthe licensed passive network provider in Qatar, Q.NBNis aiming to achieve 95 percent national coverage in the next five years by partnering with the existing telecommunications operators, Qtel and Vodafone Qatar.

Over the past years, Qtel ensured that Qatar has appropriate Internet bandwidth and infrastructure. Qtel has provided significant Internet bandwidth through different submarine cables. Currently, there are plans for at least two further international connectivity projects thatwill serve Qatar and the Gulf region.

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[12] Qatar's ICT Landscape 2011
[13] Includes both desktop and laptop computers
[14] www.ict.gov.qa

Qatar Telecom (Qtel) is partnering with TataCommunications for the construction of the Tata Global Network (TGN) Gulf Project by 2011andQtel will enable Qatar's role as a designated "landing party" in the regional network. The TGN Gulf project is a state-of-the-art Gulf-wide undersea cable network connecting the Gulf Region directly to the world's major business hubs and city centers, improving connectivity and providing foundational support for next-generation communication technology.[15]

Gulf Bridge International (GBI) will deploy and manage a subsea cable system thatwill connect the Gulf countries with one anotherand provide connectivity to the rest of the world. The network will have two fiber pairs throughout the Gulf and will use the latest DWDM of 128 x 10 Gbps. wavelengths per fiber pair to achieve a total system design capacity of 2.56 terabits per second. The planned network willoffer double landings at the major terminals of Qatar and Fujairah (UAE). GBI finalizedagreements with Vodafone Qatar in February2010 and Qtel in May 2010 to provide landing stations for GBI's cable in Qatar.[16]

Within Qatar, much work has been done to ensure that Internet infrastructure is available to end users. In collaboration with the Ministry of Municipality and Urban Planning, ictQATAR has rolled out free wireless Internet in major public parks under the iParks program.[17]

## II.    ACCESSIBILITY TO INFORMATION AND KNOWLEDGE

### A.PUBLIC DOMAIN INFORMATION

Government institutions in Qatar place great emphasis on developing public domain information both through creating their own websites and supporting other institutions in developing their online presence. For instance, Hukoomi, Qatar's online government portal,[18] ensures ease of access to information and e-services such as the issuance of visasfor citizens, residents, visitors, and businesses.

The portal includes government ministries, agencies, and authorities and is a fundamental working tool for all stakeholders in Qatar to improve governance and ease the interaction betweenthe government and its people. Hukoomi, is available through two platforms—a comprehensive web version and a simplified version for mobile devices. The portal is regularly updated to ensure thataccess is rapid and convenient. Plans are underway to expand Hukoomi's presence online through social media, makinggovernmentservices and information even more accessible to all members of Qatar's society.By2010, all core government ministries, councils, and authorities in the country had dedicated websites featuring relevantinformation for thepublic and businesses.

Qatar promotes the creation of digital content and the transition to open-source solutions to develop more locally produced digital content, with a special focus on Arabic content. The national digitization plan is underway to preserve Qatar's national heritage and share it with the world. There is a wealth of information on Qatar's rich history in print, photo, and film formats that will be digitized and made available to the public without restrictions.

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[15] www.qtel.qa
[16] www.gbiinc.com
[17] www.ict.gov.qa
[18] www.gov.qa

Institutions such as the Qatar Foundation are very active in promoting access to knowledge and information. The Foundation's own Central Library(QFCL) is scheduled to open in 2013.[19] It will offer a rich collection of print and digital resources and be open to schools, universities, research institutes, and various communitydevelopment organizations operating within and outside Education City.The library will have an initial collection of 150,000 items, and is planning to have 1.2 million books, magazines, and audio-visual materials, and a vast e-book collection.

Furthermore, the Qatar Foundation has partnered with the British Library to undertake a four-year project to digitize tens of thousands of historic documents and make them available to the public online.

In the meantime, several major libraries with heavy online and physical presence are available in Doha, bringing the resources of a number of acclaimed academic institutions to Qatar. These include Qatar University Library, the Academic Bridge Program library, the Carnegie Mellon University library, and the Learning Center School library,[20] among others.

In addition, the National Council for Culture, Arts, and Heritage in Qatar actively collates, archives, and disseminates public domain information.

To improve access to books for people with disabilities, the Qatar assistive technology center, Mada,[21]has collaborated with Bookshare to make many digital books available in both English and Arabic. These initiatives will help ensure access of e-resources to all.

## C. MULTI-PURPOSE COMMUNITY PUBLIC ACCESS POINTS

Qatar is working to ensure that affordable access to Internet resources is available to all segments of itspopulation. As mentioned earlier, free Internet access is currently available in three public parks.

These iParks are immensely popular, with the average number of users per month topping 10,000 for all three parks, and over 100,000 annually from 2009 to 2010. Two more iParks are planned for completion in 2011. Furthermore, theInternet is available for free atselected hotels, clubs, cafés, post offices,and airports—and is also accessible for affordable rates in Internet cafés across Qatar.

## III.    ICT CAPACITY BUILDING

### A. ICT IN EDUCATION AND TRAINING

In recent years, much work has been done to integrate ICT into all aspects of education and training, whether in schools, universities, government, or business. Qatar has achieved significant success in this regard, and continues to work toward universal ICT literacy as it continues to evolve as an information society.

The availability of PCs to support teaching, learning, and management in primary and secondary schools has improved, with the mean number of PCs per hundred students rising from 12.8 in 2008 to 15.5 in 2010. Personal computers are now increasingly being made available beyond computer laboratories, and are being placed within school libraries. In 2010, 98 percent of primary and secondary schools were connected to the

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[19, 20]www.qf.org.qa

[21] www.mada.org.qa

Internet. In addition, 100 percent of post-secondary institutions had Internet access as of 2010. Significant efforts are also underway to train teachers in online technology, and 71 per cent had completed ICT-related training by 2010.[22]

The national e-Education program is focused on further building ICT capabilities to enable students, teachers, and schools to realize their full potential and contribute to the development of a 21st-century education system in Qatar through several initiatives,including Knowledge Net (see VII C: e-Learning).

Training centers for ICT are available throughout Qatar with the participation of a number of public and privatesector stakeholders such as Al Bayan Educational Complex, ASPIRE, independent schools,Qatar University, Qtel, and others.

Qatar is working toward empowering all members of Qatar's society, particularly those with physical and societal impediments, to participate in its vibrant workforce through advancements in communications and technology.ictQATAR is implementing a one-year pilot project working with a range of stakeholders including the Ministry of Labor to test the virtual office environment (VOE) concept—providing the infrastructure, training, and support to allow effective work-from-home arrangements.Based on the result of this pilot effort, the Ministry of Labor will explore ways to update relevant labor laws and policies to allow for full-time e-work. Changes in laws and policies have already been implemented for enabling part-time e-work.

Mada, Qatar's Center for Assistive Technology, is collaborating withthe Gulf Cooperation Council (GCC),the International Computer Driving License (ICDL), and other content providers to offer a range of learning materials that will address individual needs of people with disabilities.

## B. TRAINING PROGRAMMES FOR CAPACITY BUILDING IN THE USE OF ICT

The Qatar national e-Learning Portal[23] offers more than 3,000 free online courses to government employees, ICT professionals, and the unemployed in various fields, including business, information technology, human resources, and marketing. These courses also offer training for recent graduates, to assist them in making the transition from school to the workforce. The initiative supports businesses as well. It also enables small and medium enterprises (SMEs) to build in-house capabilities that they might not otherwise have the resources to develop.

In addition to ICT in the field of education, Qatar strives to ensure basic digital literacy for all itspeople. By 2010, 61 percent of government employees and more than 40 percent of nurses had completed IT training.[24]Qatar aims to develop its population into digital citizens so that they can engage with ICT technologies, not only through access but also through evaluation and participation, making them active contributors to the economic, cultural, and civic life of Qatar.

## IV. BUILDING CONFIDENCE AND SECURITY IN THE USE OF ICTs

Q-CERT, Qatar's cyber security team, ensures the safe development of Qatar's telecommunications infrastructure through combatting cyber crime and working to increase trust in networks.Q-CERT helps to increase Internet usage among all members of society and businesses. Q-CERT works with government agencies, various sectors including energy andfinance,and the citizens and residents of Qatar.

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[22]Qatar's ICT Landscape 2011
[23] www.elearning.ictqatar.qa
[24] Qatar's ICT Landscape 2011

Additionally, the cybersafety work program aims to develop a healthy cyber cultureby promotingknowledge and understanding of the Internet, and engaging all members of society in the safe use of online opportunities.

Safe Space, a website ictQATAR created for students, parents, and families, provides a vital information resource dedicated to protecting youths from online risks, including cyberbullying, inappropriate content, and solicitations.

The website provides adults and children with tips on how to handle a range of scenarios and issues children might confront online, whether they are using chat rooms, downloading emails with attachments, or surfing the web.

ictQATAR launched the Safe Space website with a public awareness campaign called "Keep Them Safe, Keep Them Curious," featured in advertisements at movie theaters and on radio, television, and billboards, to widely promote the benefits and resources Safe Space offers to all members of society.

## A. Use Of Electronic Transactions And Documents

A national information assurance framework, providing cyber security guidance, has already been developed and mandated for Qatar. The framework covers both government and non-government entities and consists of laws such as the e-Commerce Law covering e-documents, e-signatures,and authentication.

Q-CERT and the Cyber Securityprogram's objectivesinclude:

- Ensuring necessary national legislation/regulations are in place to cover electronic transactions/commerce, cybercrime, Internet security, information protection andprivacy, and protection of critical information infrastructures
- Developing security baseline standards,as well as a scheme for certification against these standards, for government agencies
- Working with other regulators to ensure cyber security regulation is adequate for the industry sector they serve

## B. Online And Network Security

QCERT is working closely with government and private-sector entities to promote a national "culture of cyber security." It works with industry sectors such as finance, energy, ICT, and others that are critical for sustaining Qatar's economy, population, and government.

Furthermore, ictQATAR works with other regulators to ensure cyber security regulation is up to date for the industry sector they serve;to develop national protection strategies, practice frameworks, and tools; and to raise awareness with stakeholders to ensure that adequate security controls for those systems are in place. The result of these combined measures will amplify confidence in information systems at the national level.

## C. Privacy And Data Protection

Various stakeholders in Qatar are engaged to ensure that the legal and regulatory framework protects personal information privacy and intellectual property in digital environments. As part of the National Information Assurance Framework, Qatar plans to develop a national legal framework to protect the privacy of personal information by the end of 2011. This framework will set the minimum level of privacy protection required for all sectors, including finance, education, and health. The aim is to draw upon international best

practices while being innovative, forward looking and technology neutral. This legal framework will make an important contribution to the development of Qatar's ICT sector.

### D. COUNTERING MISUSE OF ICTs

Within Qatar, Q-CERT has been working closely with stakeholders to developmechanisms to promote cyber security and deter cyber crime. In this capacity, it works with the local law enforcement agencies to improve nationwide cybercrime deterrent processes and has assisted in building Qatar's cyberforensic capabilities.

QCERT is also developing a coordinated national cyberspace security response system to prevent, detect, deter, respond to, and recover from cyber incidents.Under this program, Qatar will expand a robust authentication program to establish secure authorization and authentication for residents andcitizens of Qatar, businesses, and government employees.

## V. ENABLING ENVIRONMENT

### A. LEGAL AND REGULATORYENVIRONMENT

Qatar's efforts to implement a supportive, transparent, and pro-competitive legal and regulatory framework began with DecreeLaw No.(36)of 2004, which established the Supreme Council of Information and Communication Technology (ictQATAR), and gave it the mandate to create a legal and regulatory environment that promotes the development of the information and communication technology sector and contributes to the overall social and economic development in Qatar. This was followed by Decree Law No.(34)of 2006, which grantsictQATARa full range of powers to regulate the telecommunications sector. Its authority includes licensing service providers and implementing policies that promote competition. The Executive Telecommunications By-Law No. (1) of 2009 was also issued.[25] The bylaw deals with many telecommunications and regulatory matters including licensing, interconnection and access, numbering, competition policy, and consumer protection.

Qatar continues to enhancetheregulatory framework within which licensed operators function. ictQATAR believes that appropriate competition improves the sector's offerings to consumers. In 2007, it granted the first license to the incumbent telecommunications provider, Qtel. In 2008, ictQATAR licensed a new mobile operator, Vodafone Qatar. The second fixed telecommunication network and services license was also awarded to Vodafone Qatar in 2010.

ictQATARis also responsible for assessing whether dominance exists in the specified relevant markets in accordance with the Applicable Regulatory Framework (ARF). In 2008 Qtelwas designated as a dominant service provider in certain relevant markets.[26] The second round of market analysis started in 2010[27] and currently the proposed definition and remedies are under public consultation through a transparent and open review process.

In addition to introducing competition to the telecommunications market, ictQATAR continues to work to protect consumers. It intends to introduce more specific consumer protection measures in forthcomingregulations. In the interim, ictQATAR has implemented a customer complaints service where consumers of telecommunications services are able to lodge complaints directly with ictQATAR.

Qatar's new e-commerce law [Decree Law No.(16)of 2010] has been ratified in the pastyear and ictQATAR is working to develop its bylaws to help organizations and individuals gain confidence in conducting business online. The ElectronicCommerce and Transactions Law gives ictQATAR the

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[25, 26, 27]www.ict.gov.qa

authorityto enable the use of electronic commerce and transactions in Qatar, including the power to issue the relevant licenses and authorizations for the certifiedservice providers.

Beyond the telecommunications market, Qatari laws are supportive of the general ICT sector. Qatar has worked to promote the rights of intellectual property right holders. The software piracy rate in Qatar has decreased by almost 10 percentage points overthe last five years due to anti-piracy efforts initiated by Qatar'sgovernment and several private organizations.[28]

Patent rights are being extended across the world through the provisions of the World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs). Qatar is a participating member in several international initiatives, listed below in Table 6.

TABLE 5: QATAR IN INTERNATIONAL AGREEMENTS

| International Agreements | Status |
| --- | --- |
| WTO | Member since January13, 1996 |
| Paris Convention | In force since July5, 2000 |
| PCT | Work in progress |
| WCT | In force since 2005 |

TABLE 6: STATUS OF KEY LAWS AND PKIS IN QATAR

| Key Laws and PKI | Status |
| --- | --- |
| e-transactions law available[29] | Yes |
| e-signature law available[30] | Yes |
| Management of PKI available | Yes |

## B. DOMAIN NAME MANAGEMENT

ictQATAR is designated to oversee the management of Qatar's country code top-level domain name.Qtel, the incumbent telecommunications operator, had managed it for the previous 14 years. ictQATARreceived approval fromthe Internet Corporation for Assigned Names and Numbers (ICANN) for the re-delegation in October 2011 and is finalizing the migration of this management from Qtel.

## C. STANDARDIZATION IN ICT

Qatar fully supports the development, use, and promotion of open, interoperable, nondiscriminatory, and demand-driven standards. For instance, as part of its integrated e-Government program (i-Gov), it is working to buildgovernment-wide IT architecture frameworks and standards that will serve as a reference for all government agencies, provide a joint IT governance model and roadmap, and create consistent IT standards. ictQATAR has already partnered with various ministries to streamline certain online procedures through a standardized systemthat reduces redundancies and improves the quality of e-services to the public.

The e-accessibility policy is being formulated in cooperation with Qatar's Assistive Technology Center, Mada, to ensure that ICT products and services are accessible to all members of the society in Qatar—especially people with special needs.

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[28] www.meed.com, www.gulf-times.com
[29, 30] Referenced to Electronic Commerce and Transactions Law [Decree Law No. (16) of 2010]

## D. ICT Investments And Government-Supported Facilitation Measures

Qatar aims to foster the development of new domestic companies by widely expanding incubation resources available to fledgling start-ups. The Digital Content Incubation Center,[31] one of ictQATAR's initiatives, provides entrepreneurs in the industry with expert guidance, innovative technology solutions, telecommunications services, office space, and accounting and legal services. In 2010, FahrasQatar became the first company supported by the Digital Content Incubation Center. The center will provide further support to the young Qataris who won ownership rights to the company through the FahrasQatar Business Case Competition. The online business directory, FahrasQatar, was developed by ictQATAR in 2008 to provide a central forum for connecting Qatar's businesses to customers, potential partners, investors, and relevant professional service vendors.

In addition to ictQATAR'sefforts, other stakeholders and government agencies have also been working to foster an information society in Qatar. For instance, the Qatar Foundation's work focuses on education, science and research, and community development.

The Qatar Science and Technology Park (QSTP), part of the Qatar Foundation, is a hub for technology-based companies from around the world. It will also serve as an incubator for start-up companies. Through providing a physical location and services, QSTP's support programs help organizations develop and commercialize their technologies. QSTP focuses on four major areas: energy, health, environment, and ICT. Its members include Cisco, ExxonMobil, GE, Microsoft, Shell, and Total. QSTP programs that support technology commercialization include[32]

- Proof of Concept Fund;
- New Enterprise Fund;
- Technology Innovation and Entrepreneurship Program;
- Mentoring Program;
- Investor Readiness Program

In order to support Qatar's fast-evolving society and address emerging gaps, the foundation is adopting investment promotion strategies, incubator plans, and joint venture opportunities. Under the joint venture model, new companies are established in Qatarthatoperate on a commercial basis, sharing ownership rights with Qatar Foundation and its partners. Some of these joint ventures include FITCH Qatar, Qatar MICE Development Institute, Qatar Solar Technologies (QSTec), MEEZA, Qatar National Convention Centre and Vodafone Qatar. These joint ventures arerecruiting and training increasing numbers of talented Qataris, improving ICT skills among the local population.[33]

## VI.    ICT APPLICATIONS

### A. E-Government

i-Govis improving the efficiency and quality of government by providing electronic services and information to those who live and work in Qatar. ictQATAR is striving to modernize and expand government services to focus more on users and to find new ways to interact with and serve them.

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[31] www.ict.gov.qa
[32] www.qstp.org.qa
[33] www.qf.org.qa

Qatar is working to enhance and standardize government operations through state-of-the-art tools that enable information development and distribution within government and with its constituents, supported by a robust, secure, and reliable ICT infrastructure. Some key initiatives that contribute tothese goals include Government Connectivity, Data Center, Security and Authentication, Next-Generation Government Standards andToolkits, Spatial Data Infrastructure, Government Access Channels, Government Shared Services, Government Payment Platform, and Customer-centric Government Services. Key achievements of thei-Govprogram include launching the following:

- Hukoomi—Qatar's online government portal

- Government Contact Center, with full functionality to handle all types of requests, queries, and complaints

- ICT architecture and standards reference, a comprehensive architectural blueprint of the government IT framework, infrastructure, application standards and policies

- e-Procurement program, to provide the ability to perform business-to-business purchases and sales of supplies and services through the Internet as well as other information and networking systems

- Government data network, to serve cross-governmental connectivity and providea secure communications platform through which government agencies can share data, applications, and services

- Government Data Center, a center of excellence for IT that will house critical computer systems and associated components for all government entities

- e-Payment Platform, a central payment platform that allows government entities to offer theirusers e-payment services to procure/pay for services online

- Business setup services,to provide the necessary e-services, guidelines, and interactive information for establishing a business through multiple channels

- Customs clearance services,an automated and streamlined system that provides essential information to residents and businesses regarding procedures related to customs clearance

- Personal documents services, a system to enhance delivery levels of ID-related services and provide a seamless e-enabled multichannel offering

Qatar'scentral interactive government portal, Hukoomi, makes more than 300 information services and 60 transactional services available online,including content from 48 public entities covering all aspects of government from submitting e-manifests for customs processing to airport entry permits. In 2010, an improved version of Hukoomi was launched with enhanced services that are faster and more easily accessible for citizens, residents, businesses, and visitors. The table below summarizes the key services offered by Hukoomi:

TABLE 7: FEATURES OF HUKOOMI

| URL of e-government portal: http://portal.www.gov.qa | | |
|---|---|---|
| Information | General | Yes |
| | Laws | Yes |
| | Directories | Yes |
| Services | Static Info | Yes |
| | DownloadableForms | Yes |
| | Interactive | Yes |
| e-Payment | | Yes |
| Online account | | Yes |
| Bilingual (English and Arabic) | | Yes |
| Citizen participation | Blogs | - |
| | Polls | Yes |
| Additional services | RSS | Yes |
| | WebStatistics | Yes |

| | | |
|---|---|---|
| Search | Yes |
| Other features | Yes |
| Name of authority in charge of ICT in public administrations | ictQATAR |
| Name of e-government authority | ictQATAR |

## B. E-BUSINESS

Qatar enacted thenewElectronic Commerce and Transactions Law[34]for local and international companies in August 2010. The law provides standards and business regulations related to important business issues, including e-signatures, e-transactions, and online authorizations. It also creates tremendous opportunities for entrepreneurs to develop innovative online business models and offerings.

Furthermore, guidelines will be established to ensure that consumers are protected when purchasing all types of ICT products and services. These guidelines will also ensurethat personal digital information and data arehandled responsibly and protected from misuse.

The e-Payment Platform, a common payment platform for all government entities, was established to eliminatethe need for outdated manual modes of cash payment. By allowing individuals and businesses to use debit and credit cards to pay bills and other fees related to government services and regulations, the e-Payment Platform is a cheaper and more efficient method for collecting government revenue.

In 2010, approximately 2.4 million transactions were conducted using Hukoomi.[35]Some of the most frequently used e-government services by individuals in Qatar include settling traffic violations, paying utility bills, applying for/renewing visas, applying for/renewing Health Cards, and applying for/renewing/reactivating Residence Permits.

Banking services available in Qatar include branch banking, online, and telephone banking. Nearly all banks in Qatar offer online banking services to customers. The use of credit, debit, and cash cards is widespread. There are even e-commerce portals like Doha Sooq (from Doha Bank), an online bilingual business exchange portal intended for both business to consumer (B2C) and business to business (B2B) transactions.

TABLE 8: LAWS SUPPORTING E-BUSINESS

| Availability of e-commerce law[36] | Yes | Law number: | Decree Law No. (16) of 2010 |
|---|---|---|---|
| Availability of e-transactions law[37] | Yes | Law number: | Decree Law No. (16) of 2010 |
| Availability of e-banking services | Yes | Law number: | - |

Businesses in Qatar are increasingly taking advantage of the country's improved ICT infrastructure and services. More than96 percent of large enterprises, 45 percent of small enterprises, and 85 percent of medium enterprises use broadband services. PC penetration within the small business segment stood at 65 percent in 2010, while each of the larger business segments had almost full penetration.[38]

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[34,36, 37] Decree Law No. (16) of 2010 on the Promulgation of the Electronic Commerce and Transactions Law (www.ict.gov.qa)
[35] www.gov.qa

[38] Qatar's ICT Landscape 2011

## C. E-Learning

In education, Qatar is modernizing learning spaces and promoting the use of ICT to enhance the learning experience. ictQATAR heavily promotes and endorses the use of ICT in education. Nearly all school teachers, university educators, and university students—and 96 percent of primaryand secondary schoolstudents—have access to PCs for educational or personal purposes.[39]

Furthermore, the country has also effectively increased the availability of PCs to support teaching, learning, and management in primary and secondary schools, with the mean number of PCs per hundred students increasing from 12.8 in 2008 to 15.5 in 2010.[40]

Efforts to further integrate PCs into the educational process are also progressing. Personal computers are now increasingly being made available beyond computer laboratories, and are being placed in school libraries and classrooms in primary and secondary institutions.

Improved Internet access allows students to expand their learning activities beyond classic teacher-led education. In 2010, 98 percent of primary and secondary schools were connected to the Internet and 100 percent of post-secondary institutions had Internet access.[41]

The Supreme Education Council (SEC) is leading numerous e-Education initiatives, including implementingadvanced learning management systems that allow students, teachers, administrators, and parents to share information and communicate online; developing IT standards and frameworks that will be applied to schools across Qatar, including standards for deploying IT in new schools; creating a national e-library that includes digitized books and other learning resources; providing ICT training and professional development for educators; and increasing usage of the National Government Network to enhance information sharing between schools. While the Supreme Education Council is principally responsible for Qatar's e-education efforts, ictQATAR will provide the broad strategic framework and monitor progress. ictQATAR is taking the lead on two e-Education initiatives: e-Maturity assessment and e-Content for education.

The e-maturity diagnostic and self-assessment tool created by ictQATAR measures the extent to which ICT is integrated and adopted in each school. The assessment, which began as a pilot program in 26 public and private schools, will be implemented in more schools across the country over the next five years.

To improve ICT skills among K–12 students, a broad-based strategy will be developed that will make digitalcontent available for educational purposes, including a curriculum on cyber safety. The SEC will continue to develop curriculum-based digital content for the K–12 public schools.

TABLE 9: COMPUTER AND INTERNET PENETRATION[42]

| | |
|---|---|
| Computer-to-student ratio | 0.155 |
| Percent of schools with Internet access | 98 |

[39, 40, 41, 42] Qatar's ICT Landscape 2011

## D. E-HEALTH

Qatar recently unveiled its National Health Strategy 2011–2016, which builds off the Qatar National Vision 2030 and Qatar's National Development Strategy 2011–2016.Qatar National Vision 2030 (QNV 2030) commits to providing a comprehensive, world-class healthcare system to ensure a population that is healthy, both physically and mentally. The Supreme Council of Health, as the highest authority in healthcare in the State of Qatar, will guide reforms to ensure that the highest international standards of healthcare are met.

The e-Health program is designed to improve overall health in Qatar and deliver the highest quality healthcare by providing the public, patients, and clinicians with appropriate and timely information. The program will use modern information technologies to improve the management and delivery of services. The program's anticipated outcomes include improved quality of care and improved efficiency of processes throughout the healthcare system.[43]

Key initiatives of SHC and HMC include creating a healthcare data warehouse information system to improve management and planning; implementing a high-speed national healthcare network; defining IT standards for the healthcare field to ensure interoperability of systems; developing an advanced electronic health record for all patients in Qatar; deploying interoperable image-sharing platforms; developing an e-health portal that provides users with health information and services that will empower them to make informed healthcare decisions; and providing ICT training for medical professionals.

Through a recent affiliation agreement with Qatar Foundation'sSidra Medical andResearch Center, Weill Cornell Medical College (WCMC-Q) in Qatar will be the primary clinical partner for Qatar's newest academic health center. The 450-bed hospital, which is scheduled to open in 2012, will allow WCMC-Q students to learn the best patient care, using Sidra's advanced technologies, such as robotics, computer-aided surgery and diagnostics, digital imaging, and electronic patient records. Shared expertise, information, and resources arehelping WCMC-Q to develop a critical mass in research and avoid redundant efforts. Furthermore, this agreement is contributing to the transfer of knowledge and technologies among workers in Qatar.[44]

Qatar has quickly becomea regional hub for robotic surgery with the official opening of Qatar Robotic Surgery Center (QRSC) in April 2010. QRSC develops new surgical technologies and, in partnership with Hamad Medical Corporation (HMC), serves as a training center for doctors and nurses who seek to enhance their knowledge of robotic and minimally invasive surgery.

As of 2010, nearly half (49 percent) of patient data is stored electronically by health organizations. High-priority tasks performed by healthcare professionals on the Internet in 2010 included communicating with colleagues or other health professionals (70 percent), and searching for work-related information (68 percent).[45]

## E. E-EMPLOYMENT

e-Employment is an important initiative within the i-Gov program in Qatar. It is a collaborativeeffort amongthe Council of Ministers, the Ministry of Labor, and ictQATAR. The employment and recruitment portal will allow employers and job seekers to post or browse for job vacancies in an online database and

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[43] www.sch.gov.qa
[44] Healthcare - *Gulf Times*, February 2011
[45]Qatar's ICT Landscape 2011 (www.ict.gov.qa)

will allow them to connect with each other efficiently.Furthermore, several government and private-sector organizations post job announcementsand receive job applications on their websites.

## VII. CULTURAL DIVERSITY AND IDENTITY, LINGUISTIC DIVERSITY AND LOCAL CONTENT

### A. USE OF ICT IN SUPPORT OF CULTURAL AND LINGUISTIC DIVERSITY

Qatar places great emphasis on preserving its national cultural and Arabic linguistic heritage, and is leveraging ICT to meet this goal. Stakeholders are leveraging ICT to aid in their preservation efforts. For instance, the National Council for Culture Arts and Heritage and the Qatar Museums Authority have impressive bilingual online presences, both to inform andto attract those interested in Qatari and regional culture, heritage, and language. Interactive online forums further serve these organizations' aims.[46]

As regulator, advocate, and information provider for all types of communications technology, ictQATAR began using social media in 2008, when it set up a Facebook page and began to use YouTube. In December 2009, ictQATAR launched its Digital Qatar blog, with both English and Arabic versions - each of which has its own content.By mid-2010, ictQATAR had a presence on 19 regional or international social media sites.

In March 2010, ictQATAR announced an eight-stage strategy that created a methodical, comprehensive plan of action to strengthen its social media presence in several key areas—content, delivery, results, and control. The plan is forward-looking, and is intended to guide ictQATAR's social media strategy into the future.

### B. LOCAL AND NATIONAL DIGITAL CONTENT DEVELOPMENT

Qatar specifically values the development of Arabic digital content. As oneof its e-initiatives, Arabic online content is being actively developed and promoted. Furthermore, ictQATAR is regularly monitoring local content development to ensure that it is accessible to all segments of society.To capture the benefits of digital content and encourage innovation and entrepreneurship and stimulate supply, the Digital Content Incubation Centerhas been established. In 2010, FahrasQatar became the first company supported by the center. ictQATAR is leading efforts to establish an official Creative Commons affiliate in Qatar, working with organizations and individuals to promote greater sharing of creative works online using flexible content rights licenses. These licenses will promote the creation of original digital content in the Arab world while protecting the rights of the content creators.

In October 2010 Qatar became the first GCC country to host a conference with Creative Commons, titled "Digitally Open: Innovation and Open Access Forum." The event is one of a series of efforts ictQATAR has undertaken to foster a digitally open society and a thriving knowledge economy in Qatar. A number of initiatives will support this overarching goal:

- A national digitization plan to digitize Qatar's heritage and culture, academic research, government laws and decrees, and health research. This will create an electronic archive, allowing for easy and widespread access to Qatar's history.
- The creation of local and Arabic digital content through local media, locally hosted websites, and the digitization of cultural artifacts and documents—which will also drive the development of the ICT industry.

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[46]www.qma.com.qa

- Data centers will be built by the government and local hosting capabilities will be expanded. This will increase competition by enabling new ISPs to enter the market (in addition to Qtel), and will lead toadditional and more varied local digital content.

## C. ICT SOFTWARE, TOOLS, AND R&D PROGRAMS IN ARABIC LANGUAGE PROCESSING

Qatar places a great emphasis on the development of local ICT tools, including research and development. Qatar itself has dedicated 2.8 per cent of its GDP to research annually.[47] In particular, the Qatar National Research Fund (QNRF) was created in 2006 under Qatar Foundation to guide the creation of the country's research programs, which will be a catalyst for a new knowledge-based economy. QNRF administers financial support to researchers at all levels, from students to professionals, in the private, public, and academic sectors. Funding is awarded through a competitive process to original projects in several areas that are deemed important to Qatar. Priority research areas include arts and humanities, computer science and information technology, education, environment, health and life sciences, industry and engineering, public policy and management, and social sciences.[48]

To strengthen ICT-related research, Qatar Foundation has established theQatar Computing Research Institute and is developing a partnership plan with the King Abdullah University of Science and Technology (KAUST) to leverage the strengths of both parties in the areas of biomedical sciences, energy, and computing research.The Qatar University Wireless Innovation Center (QUWIC) at QSTP is dedicated to applied research, technology development, consulting services, and education in wireless systems and applications. QUWIC will be an enabling platform for wireless and telecom innovations in Qatar and the region. In addition to these efforts, Carnegie Mellon and Texas A&M Universities in Qatar offer programs in computer science. Carnegie Mellon University is also establishing additional research programs based on computer science and robotics.

## D. ARABIC DOMAIN NAMES

ictQATAR led Qatar's application process for the international domain name (IDN) country code top-level domain (ccTLD) and was part of a fast-track process with ICANN for approval. Qatar received official approval for Arabic domains in March 2010, and has been working to meet all of ICANN's technical requirements for the rollout and administration of the domain names since then.

The official delegation of these Internet domains allows ictQATAR to begin administering the Qatar-specific domains, making them available to businesses and individuals in the open market. The domains will be managed by ictQATAR's Regulatory Authority through the Qatar Domains Registry, which was launched in March 2011. Qatar will be among the first countries in the world to offer non-Latin language scripts in domain names.

Currently, a number of websites are being used as pilots for the new domain names, including ictQATAR and Hukoomi. Qatar-specific Arabic domain names will be made available more broadly to government entities and registered trademark and IP holders during the next phase of registration. By the end of August 2011, the Qatar-specific domain names will be publicly available.

## VIII.   MEDIA

## A. MEDIA DIVERSITY, INDEPENDENCE AND PLURALISM

April 2003 marked the beginning of a new era in Qatar, with the establishment of a permanent constitution[49] that upholds personal liberty, safeguards the principle of equal opportunities for all citizens,

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[47] www.ict.gov.qa
[48] www.qnrf.org
[49] www.qnaol.net

protects private property, deems all people equal in rights and obligations, and prohibits expelling any citizen from the country or preventing him from returning to it. Furthermore, the constitution creates a free atmosphere whereby all types of expression are allowed and the freedom of press and publication are enhanced. The press enjoys total freedom in Qatar, and not a single journalist has been sentenced to jail (in defamation suits) in the past eight years.[50]

Qatar has an active media presence locally, regionally, and internationally, with several newspapers, and radio and television outlets. Some of itsmost renowned media channels includethe Qatar News Agency, Sout al Khaleej, Al Jazeera, and the Doha Film Institute.

## 1. *Qatar News Agency (QNA)*

QNA was established on May 25, 1975; it covers the Gulf region, the Arab world and many countries beyond. The agency uses advanced communications technology to swiftly collect and disseminate local and foreign news and publish it on relevant channels including QNA's website.All daily newspapers in Qatar have online versions, e.g.,*Al Rayah*, *Al-Sharq, Al-Watan*, *Al Arab*, *Gulf Times*, *The Peninsula*, and *Qatar Tribune*.[51]

## 2. *Sout al Khaleej Radio*

This station was established by a directive issued by the director of Qatar General Broadcasting and Television Corporation. Sout al Khaleej went on air on February 2, 2002.Its website has an electronic library with free content including information about songs, poems, and other genres of literature.

## 3. *Al JazeeraTelevision Network (JTN)*

Al Jazeera is the first independent Arabic all-news satellite TV channel serving a global audience. It began with only six hours of broadcasting during the day in November 1996. The channel debuted its website in 2001, with a dedicated news portal[52] offering complete transcriptions and audio recordings of all programs broadcast by Al Jazeera. JSN launched the English version of Al Jazeera online in September 2003. Among other things, JTN airs detailed and comprehensive political and sports news. Economic news is supplemented by live online briefing from reporters in international financial centers in London and New York.[53] Al Jazeera is known worldwide for its contribution to freedom of expression and its reporting on a variety of topics.

Qatar journalism will witness major transformation in the coming years due to the existence of Northwestern University in Qatar (NU-Q) as the first batch will graduate in 2012. NU-Q trains students to become journalists and communications professionals and specializes in combining the traditions of the media profession with digital competence.

Students at NU-Q are also encouraged to undertake individual research projects on media-related issues, which can either be integrated into the curriculum or carried out as supplementary study. Staff and students have collaborated with other QF institutions on a number of research topics, including branding and viewer perceptions in Qatar.

## 4. *Doha Film Institute (DFI)*

With culture, community, education and entertainment at its foundation, Doha Film Institute (DFI)[54]serves as an all-encompassing film hub in Doha, as well as a resource for the region and the rest of

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[50] www.qnaol.net
[51]www.onlinenewspapers.com/qatar.htm
[52]www.aljazeera.net
[53] Foreign Information Agency (FIA) - http://www.qatarinfo.net
[54] www.dohafilminstitute.com

the world. It's an umbrella organization bringing all of Qatar's various film initiatives under a single entity. DFI offers classes and training in cutting-edge filmmaking techniques and equipment to students in Doha. It offers careers and training for people with a variety of interests and backgrounds, including technology-intensive areas like editing.

For instance, a recent Doha Film Institute One Minute Workshophad cyber safety as itstheme.The videos produced as part of this workshop will be made available as a resource for Qatar schoolsseeking to raise awareness through "edutainment" (educational entertainment).

## B. THE MEDIA AND ITS ROLE IN THE INFORMATION SOCIETY

Media plays a fundamental part in an information society and is crucial in cultivating an informed public. Within aninformation society, benefits from such awareness typically include economic growth, individual opportunities, better health, improved participation in society, and good governance. A robust media is an essential watchdog for transparent and accountable political and economic systems. It helps set the agenda and represents the public's concerns in debates of national and international relevance.

Information and communication technology (ICT) is a critical element of today's mass media: it improves the speed, access, and content choices available online. By using ICT, digital media provide faster dissemination of new information, along with an interactive medium for sharing and discussing that information. Qatar's high mobile and online penetration rates, combined with online versions of most media channels, encourage ease of access to digital news and information.

Concurrently, Qatar has many favorable assets that will allow itto emerge as a leader in creating content, including its successful media and entertainment sector, along with available national resources to digitize national culture and heritage. Qatar is spearheading initiatives in order to harness the potential of the market and domestic advantages. Kindly refer to Qatar's National ICT Plan 2015 for more information.[55]

ictQATAR maintains very good relationships with all media channels to ensure that the media is being leveraged to the fullest extent possible to help transform Qatar into an information society. It is very active in its media and PR campaigns for specific ICT initiatives, and leverages these relationships to enhance its initiatives.

As more technologies are introduced, demand for radio spectrum continues to grow rapidly and must be carefully regulated and managed. ictQATAR carefully balances public and commercial interests in determining allocation and assignment of access to the spectrum.It has developed a National Frequency Allocation Planand completed a public review of this policy in 2010. In 2011, the plan will be implemented to ensure that allocation needs are transparently assessed, to meet public safety communications needs, to ensure interoperability of all available communications technologies, to reduce regulatory barriers, to support and promote innovation and competition, and to reserve appropriate spectrum for future innovative technologies. In addition, a new spectrum policy will be developed and implemented in the forthcoming years.

## C. CONVERGENCE BETWEEN ICT AND THE MEDIA

Qtel'sMozaic TV+ is Qatar's innovative "Triple Play" service, which provides home phone, digital television, and home broadband all through a single ADSL line. Mozaic TV, apremium television service, is also offered as a stand-alone option.

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[55] www.ict.gov.qa

Between Q2 2008 and 2010, nearly 50 percent growth has been recorded in the number of consumers subscribing to "Triple Play."[56] High-speed broadband network, satellite, and submarine cables will also support the emerging demand for bandwidth.

Qatar will advance the development of a comprehensive regulatory framework designed to stimulate investment and lower market barriers to support ICT and electronic media convergence through relevant policies, rules, and regulations and the authority to enforce them. ictQATAR will craft this technology-neutral framework through an open and transparent process and will also create policies that take into account emerging ICT needs; with specific attention to consumer and digital rights, e-commerce regulations, infrastructure sharing, number portability, quality of service, spectrum planning, strategic sector review, and type approval and enhanced licensing regime

In addition, they will also address other regulatory issues including limiting human exposure to radio frequency and electromagnetic fields.

## IX. INTERNATIONAL AND REGIONAL COOPERATION

### A. FINANCING OF ICT NETWORKS AND SERVICES

Qatar's attractive investment climate and commitment to development and transparency has enabled it to attract major private national and foreign investorsto the ICT sector. A second mobile telecommunications license was issued in 2007 and a fixed license in 2010. Both licenses were issued to Vodafone Qatar. Current licensees, QTel and Vodafone Qatar, have and will continue to invest heavily in the sector through the deployment of networks and advanced services. Qatar National Broadband Network (Q.NBN)Company will also drive rapid deployment of the fiber-to-the-home (FTTH) network by 2015 through public and private investment.

### B. INFRASTRUCTURE DEVELOPMENT PROJECTS

Sector players in Qatar have been able to implement major infrastructure projects through raising their own capital. Fortunately, Qatar's strong economic conditions place it in a position where it can help other countries in their development projects.

### C. WSIS FOLLOW-UP

Qatar is actively working toward the achievements and realization of theWSIS Objectives. Liberalization of telecommunications sector, large number of government services online, focus on education sector, and access to public information are all strong indicators of Qatar's alignment with WSIS targets. Furthermore, Qatar's Digital Inclusion program aims to bridge the digital divide in Qatar by enhancing the ICT readiness and usage of all members of society. Approximately 63 activities designed to shareinformation have been uploaded by ictQATAR on the WSIS stocktaking website.[57]

### D. PARTICIPATION IN INTERNET GOVERNANCE ACTIVITIES

In a bid to narrow the information gap between the Arab world and the West, many Arab countries officially announced their commitment to Arabizing the Internet through creating an experimental environment for Arab Internet sites (domain names). Qatar received official approval for Arabic domains in March 2010. Read more regarding domain names on page 19.

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[56]Qtel report
[57] http://groups.itu.int

As Qatar continues to advance in the digital age, the country will closely follow the impact of the Internet and its governance on the progress of society through its newly established program, Internet and Society. The program will serve as a research hub for studying Internet technology, policy, and economics. Qatar is closely involved in many Internet governance activities, and recently provided important regional insights on key issues in Internet governance at the Internet Governance Forum (IGF 2010).

## X.   BUILDING THE ICT SECTOR

### A. ICT FIRMS

ictQATAR works to promote ICT firms throughout the value chain. It founded Malomatia in May 2008 with a vision for the company to be a leading IT service provider in the region, specializing in end-to-end business and technology solutions. To date, Malomatia has provided innovative strategic IT solutions and services to ictQATAR for services including the launch of the Hukoomi portal[58] and the Learning Management System initiative.[59]

### B. GOVERNMENT FACILITATION

The Qatari government and all public stakeholders aim to assist SMEs in their adoption and implementation of ICT-related solutions, in order to increase their competitive edge and facilitatetheir access to capital.

The Business ICT Adoptionand Promotion initiative aims at providing support to businesses, especially SMEs, to demonstrate the benefits of incorporating and utilizing ICT in their business operations. In today's global economy, the ability of SMEs to leverage technology is crucial. By promoting the adoption of ICT, Qatar promotes SMEs' ability to find new markets for their goods and services, and discover the most efficient suppliers. Where ictQATAR sees gaps in the development of SMEs in this regard, it acts to address their causes.

Hosted by ictQATAR, Business Connect is a series of seminars highlighting the latest thinking in ICT for small and medium enterprises.

### C. CONTRIBUTION OF ICT SECTOR IN THE NATIONAL ECONOMY

Qatar is a small country, with a population approaching 1.7 million.By 2009, an estimated 20,000 ICT staff were employed by Qatar's private sector, representing 1.6 percent of the entire workforce in the country. This number is expected to increase to approximately 24,000 individuals by the end of 2011.[60] Revenues from ICT are equivalent to 1.5–2 percent of Qatar's GDP. It is a sector that is growing in significance, with efforts to diversify the economy and reduce its dependence on oil and gas contributing to this growth. The ICT market in Qatar continues to grow, and is projected to expand at a double-digit compound annual growth rate (CAGR) from USD1.7 billion in 2007 to USD3.70 billion in 2013.[61]

### D. R&D AND INVESTMENTS IN THE ICT SECTOR

Qatar dedicates 2.8 per cent of its GDP to science and research.[62] Qatar seeks to promote research and innovation locally through funding and incubation programs. It also looks to attract moreforeign investment

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[58] www.gov.qa
[59] www.ict.gov.qa
[60] Qatar's ICT Landscape 2011
[61] IDC, Insights into Qatar's ICT Industry 2009
[62] www.ict.gov.qa, www.qf.org.qa

in the ICT sector—through the QSTP it has succeeded in attracting a number of high profile R&D investors such asCisco, Gulf Bridge International, Microsoft, QNEXUS, and Qatar Robotic Surgery Centre.

Table 10: Status OfICT R&D Facilities, Industrial Clusters and Incubators

|  | STATUS |
| --- | --- |
| ICT Research facilities | Existing |
| ICT Industrial clusters | Existing |
| ICT Incubators | Existing |

# XI. MILLENNIUM DEVELOPMENT GOALS

## A. PROGRESS TOWARD ACHIEVING THE MDGS

Qatar ratified the Millennium Development Goals in 2000 and has already achieved most of the goals before the scheduled date (2015). It is moving steadily toward achieving the rest of these goals.[63] High levels of public investment in key programs and projects have accelerated Qatar's progress—particularly in areas such as urban development, health, education, and the environment. Success has been achieved through development projects and general or sector-specific policies in recent years.

The country has been largely successful in meeting its goals to eradicate extreme poverty and hunger; achieve universal primary education; reduce child mortality; combat HIV/AIDS, malaria, and other diseases. It has also ensured environmental sustainability and global partnerships for development, and has made significant progress toward meeting other objectives, including promoting gender equality and women empowerment.

### Goal 1: Eradicate Extreme Poverty and Hunger

The robust economic climate and development in the State of Qatar have resulted in high income security and good quality of life.In 2007, income levels in thecountry greatly exceeded the one USD per day MDG target—99 percent of households hadmonthly incomes that exceeded QAR10,000 (approx. USD 2,734 per month).[64]

### Goal 2: Achieve Universal Primary Education

Compulsory education, approved by the Emir in September 2001, resulted in the expansion of schools in Qatar. Starting with a few traditional schools, the educational system now covers basic education as well as institutions for higher education, such asthe University of Qatar and other educational institutions located in Education City. Moreover, Qatar succeeded in ensuring access to primary education forboth males and females. The net enrollment rate in primary education was over 90 percent for both genders in 2009.[65]

### Goal 3: Promote Gender Equality and Empower Women

Women in Qatar benefited during the last decade from government initiatives thatestablished an advanced and open society based on the principle of equal opportunities for all segments of Qatari society.

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63, 64, 65Millennium Development Goals in Qatar, 2010 (www.qsa.gov.qa)

Between 2000 and 2008, the growthrate of Qatari women in the different levels of the educational system exceeded 50 percent.[66] This statistic confirms the likelihood of attaining gender equality at the various levels of education before 2015. The percentage of Qatari women participating in the workforce rose from 30 percent to 36 percent between 2004 and 2009.[67]Furthermore, more females with domestic responsibilities will be empowered to participate in the workforce through the virtual office environment (VOE) model.[68]

Representation of Qatari women in the political arena was further strengthened by the ratification of Decree Law No. (17) for the year 1998 that gave women the right to participate inthe municipal council elections. Since then opportunities for Qatari women in government haveincreased, with the first elected woman entering the municipal government in 2003. This was followed by the appointment of women tomanagerial posts in ministerial andgovernmental bodies, as well as the increased participation of women in business activities. This openness reflects the steady expansion of women's participation in the political life of the State of Qatar.

## Goal 4: Reduce Child Mortality

The healthcare system has made great progress in providing health services to citizens and residents of Qatar. As stated in Article (23) of the Constitution: "The State cares for public health and provides the means of prevention and treatment from diseases and epidemics as per the law." To ensure the sector's sustainability, the government allocated 9.6 percent of thestate budget in 2008–2009 for health and social services.[69]

The rate of mortality for children under 5 years has declined significantly in recent years, dropping to 8.8 per thousand in 2009, compared to 16 per thousand in 1990.[70] This progress has moved Qatar to the levels of advanced industrial countries. This is partly due to significant progress in providing maternal and prenatal medical services to all members of society in Qatar.

## Goal 5: Improve Maternal Health

Nearly 30 percent of the medical doctors working in the government's health sector during 2008 were assigned to care for pregnant mothers and the safe delivery of their children. Qatar realized the universal coverage (100 percent) of mothers'prenatal, childbirth, and postpartum careby skilled health professionals. This carehas resulted in a decline in maternal mortality rates during pregnancy, childbirth, and postpartum. In 2009, the number of maternal mortalities for Qatari women during these three stages, per one hundred thousand live births, was zero compared to 16 in 2005. This decline is attributed to the sustainability and comprehensiveness of healthcare for women before and after birth and the provision of various medical examinations and follow-up tests.

## Goal 6: Combat HIV/AIDS, Malaria, and other diseases

The prevalence of HIV in Qataris still very low even among the most vulnerable groups such as youth, where the number of those infected did not exceed a few cases per year.[71] Qatar provides medical care to HIV patients, including all required prescriptions. Malaria infections do not constitute a health problem in the State of Qatar. The country has made considerable efforts to swiftly detect and treat cases of the disease coming across the border. Furthermore, malaria is not a domestic problem because Qatar's natural environment is not conducive to its existence and spread. Other diseases like tuberculosis are not considered to be a health problem andfewerthan 600 individuals carried the infection.[72] The proportion of tuberculosis

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[66, 67, 69, 70, 71, 72] Millennium Development Goals in Qatar, 2010
[68]www.ict.gov.qa (2010 Annual Report)

cases detected and treated was close to 100 percent in the recent years; an achievement that attests to the improvement of public health in Qatar.

## *Goal 7: Ensure Environmental Sustainability*

Environmental issues are a cornerstone of the Qatar National Vision 2030. It stipulates the need to "manage the environment so as to ensure harmony and consistency between economic and social development and environmental protection".

Article 29 of the Constitution further supports this objective[73]: "The natural wealth and resources are the property of the State. The State should preserve and utilize them according to the provisions of the law."The government continued to proactively address environmental issues by creating the Supreme Council for the Environment and Natural Reserves in 2000 and establishing the Ministry of Environment in 2008.The Qatar Green Center was created to promote tree planting, urban agriculture, and other green initiatives in 2005.

ictQATAR plans to create green ICT policies and guidelinesto guarantee Qatar's commitment to sustainable development with a limited impact on the environment. This includes promoting and providing incentives for ICT growth while reducing greenhouse gas emissions and energy consumption and handling disposed equipment and materials responsibly.

ictQATAR is working with mobile providers to ensure that the cellular transmission towers throughout Qatar are safe and will not have any detrimental impact on health. The purpose of these regulations is to establish regulatory practices for limiting human exposure to radio frequency and electromagnetic fields, which will protect the public from any adverse health effects. In addition, these regulations will be in compliance with international standards for exposure limits and protection. Lastly, relevant authorities will be consulted and notified before radio apparatus is deployed.

## *Goal 8: Develop a Global Partnership for Development*

Qatar ratified many international and regional conventions related to development issues and international cooperation to ensure the expansion of development capacities in developing nations. Article (7) of the Constitution emphasizes the cooperation with other countries and is consistent with the trends of modern foreign policy.

To address issues related to socioeconomic development, health, education, famine, poverty, and humanitarian disasters in the least-developed countries, Qatar establishedthe South Fund for Development and Humanitarian Assistance.Since 2006, it has committed up to 0.7 percent of its gross national income for development assistance, out of which 15 percentisallocated to the least-developed countries. The aggregateaid and development assistance provided by Qatar from 2005 to 2009 totaled USD 2.01 billion.[74]

Reach Out to Asia (ROTA)[75] is a Qatari non-governmental organization established in 2005. ROTA has established itself as a significant player in the realm of international humanitarian relief and development through building strong partnerships and support from volunteers.The World Innovation Summit for Education (WISE),[76]launched in 2009, is anotherinternational initiative and platform for a varietyof established and new educational stakeholdersto collaborate proactively all year round.

Qatar progressed at steady pace toward improving trade openness through measures and administrative procedures thatcontributed to creating an environment that is attractive to foreign investors. The country continues to enhance its efforts to further improve the openness of its trading and financial system.

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[73, 74] Millennium Development Goals in Qatar, 2010

[75] www.reachouttoasia.org
[76] www.wise-qatar.org

ictQATAR has created a comprehensive strategic framework, Qatar's National ICT2015 Plan , to address both the challenges and the opportunities within the ICT sector. This national ICT planis aimed at maximizing the economic and societal benefits from the use of ICT over the next five years. Qatar's National ICT2015 Plan   identifies five thrusts thatare aligned with the government's broader national goals as articulated in its Vision 2030 and represent the key stepping stones along the path to enabling Qatar to become a leading knowledge-based economy.

As stated in table 1, there are 11 national ICT programs that support five thrusts. These national programs are strongly aligned with the expected role of ICTs[77] in helping to achieve the Millennium Development Goals.

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[77] Regional Profile Of The Information Society In Western Asia, 2009