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**NATIONAL PROFILE OF THE INFORMATION SOCIETY
IN BAHRAIN**

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Introduction

The Kingdom of Bahrain is an Arabic island in the Persian Gulf. The Kingdom of Saudi Arabia lies to the west and is connected to Bahrain by the King Fahad Causeway, which officially opened on 25 November 1986. Qatar is to the southeast across the Gulf of Bahrain.

In a region experiencing an oil boom, in 2008, Bahrain was named the world's fastest growing financial center by the City of London's Global Financial Centers Index¹. Bahrain's banking and financial services sector, particularly Islamic banking, have benefited from the regional boom. In Bahrain, petroleum production and processing account for about 60 per cent of export receipts, 60 per cent of government revenues, and 30 per cent of GDP². Economic conditions have fluctuated with the changing fortunes of oil since 1985. With its highly developed communication and transport facilities, Bahrain is home to multinational firms. A large share of exports consists of petroleum products made from imported crude oil. Construction proceeds on several major industrial projects. In 2004, Bahrain signed the US-Bahrain Free Trade Agreement, which will reduce certain barriers to trade between the two nations.

TABLE 1. BAHRAIN GENERAL INDICATORS, 2008

Indicators ³	Value for 2008
Population	1101,230
GDP at market price (Million. US\$)	21902.3
Merchandise imports (Million. US\$)	7,042.0
Merchandise exports (Million. US\$)	3,526.9

¹ Hedge Fund Review, 18 March 2008. <http://www.hedgefundsreview.com/public/showPage.html?page=744774>

² Arabianbusiness.com, <http://www.arabianbusiness.com/517455-bahrain-calling>

³ Central Informatics Organization, the foreign trade data and national account data are provisional; the population is based on the TRA estimation.

I. THE ROLE OF THE GOVERNMENT AND ALL STAKEHOLDERS

A. NATIONAL INFORMATION SOCIETY POLICIES AND E-STRATEGIES

The Kingdom of Bahrain values the importance of information and communication technology (ICT) and has therefore undertaken comprehensive programs to implement the ICT application effectively. As a result, Bahrain has taken several initiatives in the ICT field. The following paragraph described the three main aspects.

1. *Establishment of ICT Committees*

One of these initiatives was setting-up a Supreme Committee for Information and Communication Technology (SCICT) in July 2005. The SCICT is headed by the Deputy Prime Minister and it is involved 10 ministers. The objectives of this committee are as follows:

- (a) To implement the guidance for the e-government's implementation;⁴
- (b) To ensure the existence of strategies and comprehensive plans for the development of information technology field;
- (c) To coordinate among all public and private institutions working in the field of information technology to prevent duplication and conflicts among them;
- (d) To overcome obstacles to the development of information technology in the government sector and work to resolve them rapidly;
- (e) To keep pace with global developments in the information technology field at the government level;
- (f) To obtain supports of all public and private institutions to implement plans and strategies;
- (g) To consolidate the efforts towards implementing the e-government strategies and plans.

The main SCICT) achievement was setting up the e-government strategy for the Kingdom of Bahrain. In addition SCICT has set up the Bahrain eContent Award.

Moreover, a Technical Committee for Information and Communication Technology (TCICT) was set-up on July 2005 to support the SCICT implement its objectives. The TCICT includes representatives from various ministries, public agencies and non-government organization as follows:

- Central Informatics Organization;
- Ministry of Transportation;
- Ministry of Information;
- Ministry of Education;
- Ministry of Health;
- Ministry of Justice;
- Central Bank of Bahrain;
- Bahrain telecommunication Company.

⁴ Source: Law Number (25) for the year 2005 with respect to Supreme Committee for Information and Communication Technology.

2. *E-government Strategy*⁵

The e-government strategy for the Kingdom of Bahrain is focused on ensuring effective delivery of government services to citizens, residents, businesses and visitors (customers). The e-government strategy for the years 2007-2010 was set up in 2006 by the SCICT. The e-government strategy is summed up by: "Delivering Customer Value through Collaborative Government". This will allow the customers to avail services in an integrated manner in a situation where multiple agencies are connected and collaborate to provide a service. The concept of collaborative government goes beyond government as much as it also includes the private sector and the non-government sector.

In order to ensure that the success of the vision can be measured and monitored, the strategy clearly defined its expected outcomes and targets.

An action plan (strategic priorities) has been identified for implementation on 2007-2010⁶ to ensure achieving targets. Strategic plans include channel enhancement, service enablement, and implementation of key enablers.

3. *The Telecommunication Sector or The National Telecommunications Plans*

In 2003, the Kingdom of Bahrain embarked on a process of liberalization of telecommunication sector and the First National Telecommunications Plan⁷ guided the initiation of this process. The First Plan established the policy of the Government to create a free telecommunications market environment that would be increasingly attractive to the private sector. The First Plan paved way for licensing of new establishments in this sector and the issuing of licenses, including spectrum licenses; the requirement of universal service; and the role of Telecommunications Regulatory Authority (TRA).

While the Second National Telecommunications Plan⁸ sets out the requirements of the Government for the further development of the sector over the years 2008-2010. It sets out the policies for the regulation and development of the telecommunications sector. In particular it is an objective of the Second Plan to further assist the telecommunications sector in becoming a major force in the development of the national economy. The Second Plan supports meeting the requirements of international agreements especially in the scope of electromagnetic spectrum.

In addition, the government has provided the necessary infrastructure to support the country's ICT sector.

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

Bahrain focuses on the partnership between the public and private sectors. One of the most important achievements in this domain is the cooperation⁹ between the United Nations Industrial Development Organization (UNIDO), Bahrain's Ministry of Commerce and Industry and the Kuwait Finance House in assisting in business-planning phase of the Technology Park. The launch of the Technology Park was in November 2006.

⁵ E-government authority, <http://www.ega.gov.bh/downloads/resources/Strategy-English.pdf>

⁶ E-government authority, <http://www.ega.gov.bh/downloads/resources/Strategy-English.pdf>

⁷ Decision No. (33) of 2003, Regarding the National Telecommunications Plan, 20th July 2003.

⁸ Decision No. (8) of 2008, Regarding the National Telecommunication Plan, 13th February 2008.

⁹ <http://www.unido.org/index.php?id=o26334>

C. ROLE OF NON GOVERNMENTAL ORGANIZATION

A strong ecosystem of organizations such as the Bahrain Internet Society (BIS), Bahrain IT Society (BITS)¹⁰, exists. BIS and BITS regularly undertake programs to increase awareness regarding the ICT and improve the ICT skills of the populace thereby helping in the move towards the establishment of an Information Society by introducing different types of training programs.

II. ICT INFRASTRUCTURE

There are several ongoing ICT-infrastructure development initiatives in Bahrain; which are strategically important because of the magnitude of investment, anticipated benefits, and fit with national ICT plans. Progress is measurable in network and teledensity achievements, regional and global connectivity, as well as in operational e-government facilities.

As of December 2007 Telecommunication Regulatory Authority (TRA) has issued 152 licenses to 68 companies. Out of these 68 companies, 16 operators currently provide telecommunications services.

A. INFRASTRUCTURE

1. Fixed and Mobile Telephone Network and Penetration

By the end of 2008, there were 220,386 fixed lines compare to 203,541 in 2007. The number of fixed lines grew by 8 per cent between 2007 and 2008 due to the growth of fixed wireless.

TABLE 2. FIXED LINES INDICATORS, 2005-2008

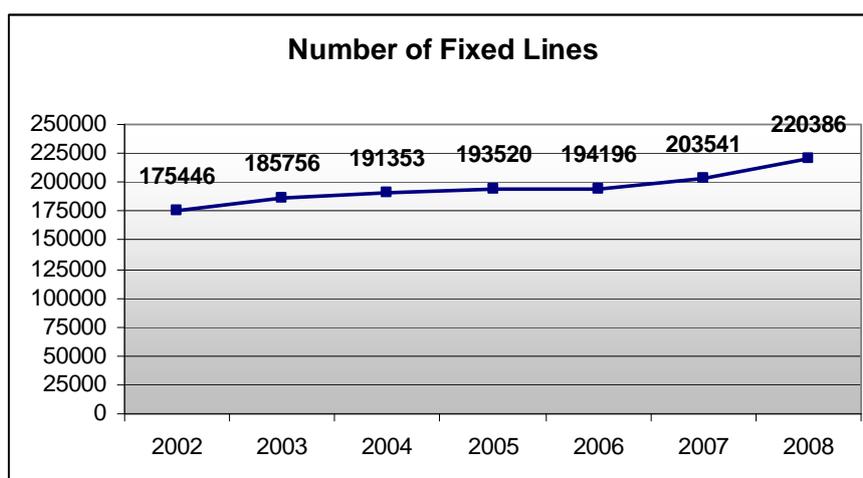
Indicator for Fixed Line Services	2005	2006	2007	2008
Number of fixed lines	193,520	194,196	203,541	220,386
Fixed line penetration ¹¹ (Percentage)	21.8	20.2	19.6	20
Number of residential fixed lines	121,918	122,343	116,951	130,121

Source: <http://www.tra.org.bh/en/marketReport.asp>

¹⁰ <http://www.bis.org.bh/>, <http://www.bits.org.bh/>

¹¹ The population figure has been revised by the Central Informatics Organization in 2007.

Figure 1. Growth in fixed-lines, 2002-2008



Source: <http://www.tra.org.bh/en/marketReport.asp>

2. Mobile Shone Services

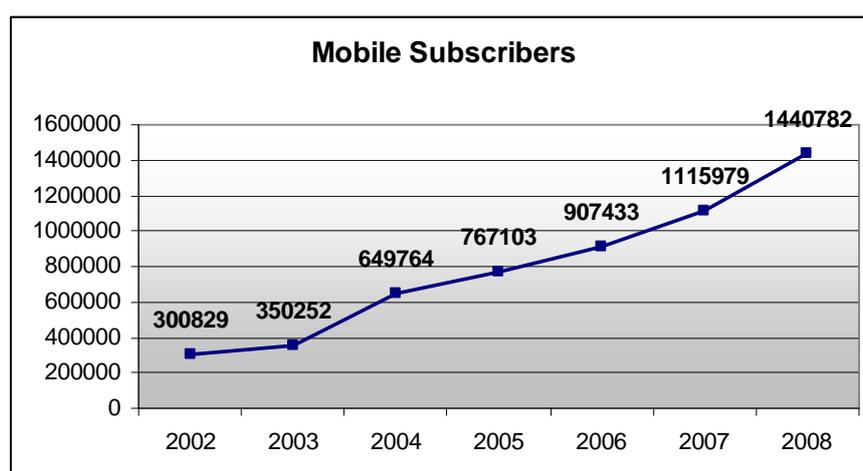
At the end of 2008 there were over 1.4 million mobile subscribers in the kingdom of Bahrain. In December 2008 mobile penetration in Bahrain was 131 per cent.

TABLE 3. MOBILE SERVICES INDICATORS, 2005-2008

Mobile Services	2005	2006	2007	2008
Prepaid Subscribers	635,277	756,268	923,702	1,210,163
Postpaid Subscribers	131,826	151,165	192,277	230,619
Total mobile Subscribers	767,103	907,433	1,115,979	1,440,782
Mobile penetration as a percentage of total population	86.3	94.5	107.4	131

Source: <http://www.tra.org.bh/en/marketReport.asp>

Figure 2. Growth in mobile subscribers, 2002-2008



Source: <http://www.tra.org.bh/en/marketReport.asp>

B. INITIATIVES AND PROJECTS FOR ICT INFRASTRUCTURE AND DEVELOPMENT OF NEW SERVICES

Significant investment has already been undertaken to provide a highly-developed technology infrastructure.

The Government Data Network (GDN) is the backbone of e-Government. It is a Government - wide secured intranet infrastructure connecting almost all the Ministries at more than 200 sites. GDN provides the necessary connectivity for all e-Government initiatives. The network is secure and is future-proofed and in the future will be able to carry data, voice and video messages.

The telecommunications infrastructure was fully digitised in 1999, and today it is one of the most advanced in the GCC. Bahrain's Batelco is now migrating all its services to the next generation network (NGN). When migration is complete, Bahrain will have state-of-the-art integrated services at par with the best in the world.

C. ICT CONNECTIVITY

At the end of 2007 there were 71,761 residential subscribers, of which 3,752 were dial-up subscribers, 62,699 were fixed broadband subscribers and 5,310¹² were mobile broadband subscribers. The growth of residential internet subscribers has accelerated in year 2007.

At the end of 2007 there were 8,227 business subscribers, of which 2,673 were on dial-up and 5,554 on fixed broadband. The proportion of business broadband subscribers grew from 53 per cent in 2006 to 67 per cent in 2007.

D. INTERNET INFRASTRUCTURE

Internet Service Providers and Penetration

At the end of 2008 there were 114,502 internet subscribers, of which 96 per cent were broadband subscribers and 4 per cent were dial-up subscribers.

The Broadband subscribers increased by 50 per cent between 2007 and 2008. At the end of December 2007 ten operators provided internet services in Bahrain. They offered four types of services: dial-up, wired broadband, wireless broadband and mobile broadband.

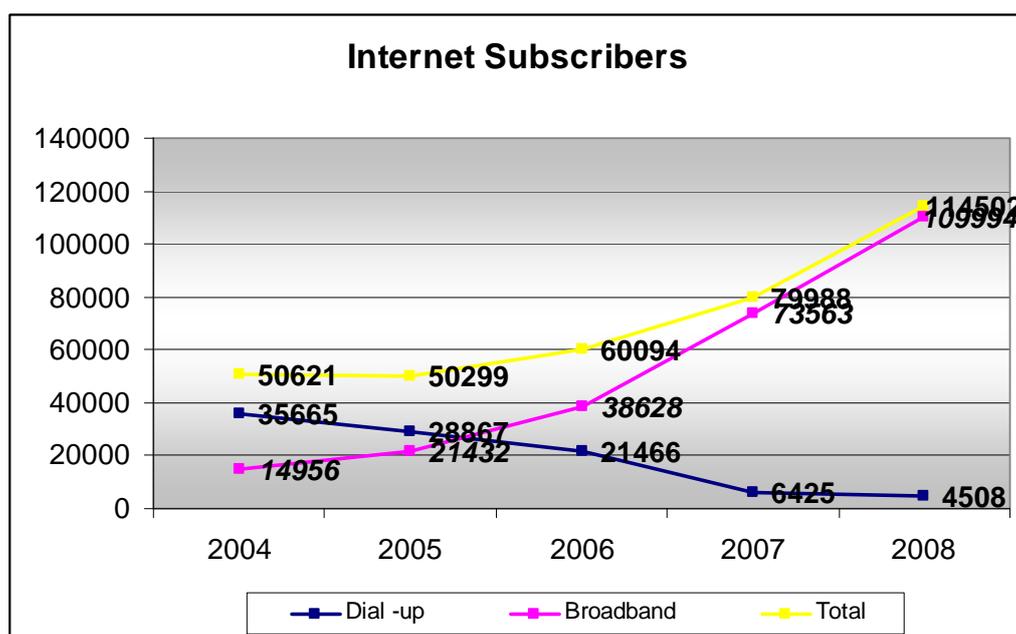
TABLE 4. INTERNET SERVICES INDICATORS, 2005-2008

Internet Services Indicators	2005	2006	2007	2008
Dial-Up subscribers	28,867	21,466	6,425	4,508
Broadband Subscribers	21,432	38,628	73,563	109,994
Total Internet Subscribers	50,299	60,094	79,988	114,502
Internet Penetration Rate (<i>percentage</i>)	5.7	6.3	7.7	10
Broadband Penetration (<i>percentage</i>)	2.4	4.0	7.1	10
Number of residential fixed broadband subscribers	18,764	34,858	62,476	85,419

Source: <http://www.tra.org.bh/en/marketReport.asp>

¹² <http://www.tra.org.bh/en/marketReport.asp>

Figure 3. Growth in number of Internet subscribers, 2004-2008



Source: <http://www.tra.org.bh/en/marketReport.asp>

III. ACCESS TO INFORMATION AND KNOWLEDGE

A. PUBLIC DOMAIN INFORMATION

The Kingdom has put in place a comprehensive program to ensure that all the government organizations publish the data available in the public domain on their respective websites. The e-government strategy also propounds the publishing of all the procedural information and forms on the e-government portal and the ministerial websites. The constitution of the country, important laws and decrees, information pertaining to procurements made through the tendering process of the tender boards and other important / useful procedural information has already been made available on the internet.

Within that the e-government aimed to provide each Bahraini with an affordable PC with an Internet connection to increase IT literacy and allow access to e-government services.

B. ACCESS TO INFORMATION AND PUBLIC INFORMATION

The government of Bahrain has provided a free access to the internet in many access points such as public library. On other hand, the private sectors such as café, shopping malls have used the WIFI technology to attract customers by this they provides a free access points.

C. MULTI-PURPOSE COMMUNITY PUBLIC ACCESS POINTS

The central theme of the e-government strategy is to enhance public service delivery through the phased electronic enablement of services. However, provisioning services through electronic means is only useful if it facilitates the customers to access services anytime and anywhere in a more convenient manner. Identifying channels of customers' preference is a critical success factor for effective e-government.

Based on the technological choices available today, readiness levels of various government agencies, customer preferences and an overwhelming preference of key decision makers for integrated service

delivery, the following channels have emerged as the main service delivery channels in addition to traditional government offices:

1. *National Toll Free Contact Centre*¹³

The National Contact Centre will essentially provide support for all the approximately 150+ services within the next 3 years serving ¹⁴as a first point of contact for most customers exploring different delivery channels. The call centre will provide information on all government services with certain value added services like status checking and grievance redressal. Taking into consideration the substantial expatriate population in Bahrain, the contact centre will provide multi-lingual support with Arabic, English, Malayalam and Filipino as the key languages. The National Toll Free Contact Centre was launched on November 2008.

2. *Common Service Centres (including self-service kiosks)*

Common Service Centres are to be set up either on existing government premises (government agency counters, post offices, governorates, police stations) or altogether new locations. There will be a total of 15 Common Service Centres by the end of 2010 facilitating all portal-based services including those requiring customer's physical presence. This channel will also provide services related to payment and collection along with form distribution and submission for all government services. However, other major customers of Common Service Centres are expected to be the physically challenged customers and also those who require aid in accessing electronic services. For those customers who are constrained by lack of Internet access, there will be an information help desk for their assistance and also a self-service (or facilitated) kiosk for accessing the Internet to avail any government service.

3. *Mobile Gateway enabling m-Government*

Using the mobile gateway, a number of selected services available on the e-Government Portal can be delivered such as Parking fees, Traffic contravention, Flight timings, Currency converter, Payment services, Information on traffic congestion, diversion, etc.

Further, e-government will be used to enable proactive delivery of services, i.e. push services, wherein customers would be informed of any upcoming service (either a due fee payment or due renewal of some document etc.). The Mobile Gateway will provide selected information services for visitors to Bahrain, like National Contact Centre numbers, select hotels and restaurants available in Bahrain, places to visit in Bahrain, regulations for visitors in Bahrain, etc. Also a mobile interface/application connectors will be developed for the eGovernment Portal and applicable agency applications to enable provisioning of eServices via mobile/wireless devices.

4. *eGovernment Portal*¹⁵

The e-Government portal is expected to be the launch pad for all electronic services. Therefore, all the 150 odd services are expected to be delivered through it by 2010. In addition to specific government services, there are other core-services that are common to all government agencies - such as information (procedure, service levels, prerequisites, service details), online download and submission of forms to avail a service, status tracking for any service applied for and a grievance redressal system for all government services. These services also, taking into consideration the diverse population in Bahrain, multi-lingual support is to be provided in a phased-manner for Arabic, English, Malayalam and Filipino.

¹³ <http://www.ega.gov.bh/en/initiatives.php>

¹⁴ <http://www.ega.gov.bh/downloads/resources/Strategy-English.pdf>

¹⁵ <http://www.bahrain.bh>

IV. ICT CAPACITY BUILDING

A. ICT IN EDUCATION AND TRAINING

1. Primary and Secondary Education

King Hamad's Schools of the Future project is a good example for usage of ICT in primary and secondary education. The project was established under the guidance of His Majesty the King of the Kingdom of Bahrain. This project was initiated by His Majesty so as to provide all with modern educational services that coincide with scientific and technological advancements. This project is undertaking wide-ranging educational improvements and developments. Also it is considered a substantial turning point in the field of education. It reassess the traditional learning system that we have been employing for many years, and turns it into an IT based system that prepares future generations to establish an advanced information society and build a knowledge-based economy. The goals of the project are as follows:

- Developing the educational system in the Kingdom and elevating its products;
- Accelerating the pace of human development;
- Establishing an Information Society;
- Building a Knowledge-Based Economy.
- Starting with 11 schools spread over the 5 governates;
- Providing schools with the necessary equipment, projection screens, and linking them via a network;
- Cooperating with Batelco to develop a network so as to link the schools with the educational portal.
- Transforming textbooks into interactive e-books;
- Systematically developing textbooks and edifying e-learning contents.

The Project entails a complete educational organization that includes an educational portal that allows access of students, teachers, administrative staff, and parents according to their needs and restriction levels as the following:

(a) *The School Administration*

Provides the school administration with a complete system that contains information about the staff, teachers, students, parents, educational subjects, schedule and administrative systems

(b) *The Teacher*

Provides teachers with a program where any given subject, after its transformation into an e-book, can be taught at a click of a button, and where teachers can convey any piece of knowledge they see fit via this program. It also enables teachers to give live lectures to all schools within the network, and will also enable teachers' access to educational sites so that they can obtain the most benefit.

(c) *The Student*

The educational organization allows students to interact with other students and teachers.

(d) *The Parent*

The Parent interacts with the organization to access offspring's academic performance, behavior, attendance.

(e) *Curricula*

This organization enables curricula specialists to prepare electronic education material, and keep in contact with students and instructors.

King Hamad's Schools of the Future project, initially covering 11 schools and benefiting more than 11,000 students, has been launched as a centerpiece of this process. The project aims to establish an educational portal and provide eLearning facilities in all schools. The entire course material is being digitized, to facilitate the availability of courses online. By 2009, all schools will be covered under the project, propelling Bahrain's education system to the forefront. With increased use of ICT, the next generation is expected to be more competitive in the new e-Society.

2. Higher Education

Bahrain University¹⁶ provides its students with a variety of services, including electronic registration and tuition payment, as well as online selection of courses. The university strives to develop and introduce new services, such as e-learning syllabi. Moreover an e-Learning Center was established in the University of Bahrain. The Center¹⁷ was established to cope with the latest developments in Information Technology and to employ this technology in teaching and learning processes at the university and academic institutes. The Center aims at providing qualitative development in learning and to qualify learning to a better educational output in order to create graduates capable of coping with continuous changes and using these changes to serve their country. At the current moment this center is providing an access to students and faculty to provide online identify possible plagiarized text; permits faculty and students to exchange documents, graphics, drawings, etc. The access is through a Blackboard platform in which the students and the faculty have their own IDs and passwords.

Meanwhile ,students at the Bahrain branch of the Kuwait-headquartered Arab Open University use the Internet as a main channel to gain access to information and communicate with teachers and fellow students through discussion.

In addition, most of the facilities provided by private and the government colleges and universities such as classrooms, hall and the libraries are connected to the internet.

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

The government of Bahrain understands the importance of capacity building in the use of ICT. As a result, the government provides hundreds of training programs each year to its employees. For example the ministry of education has provided an ICT courses to of its staff.

Furthermore, the e-government authority recently began running a series of training programs for Bahraini citizens across all governorates of the Kingdom aimed at elevating IT literacy and encourage the usage of the eServices available on the eGA's National Portal¹⁸. This initiative, offered free of charge to Bahraini nationals, is conducted in partnership with Microsoft and the Bahrain Internet Society (BIS).

With the growing interest of individuals and organizations in computer literacy training programmes, the numbers of institutes that offer such programmes have risen. These largely concentrate on providing training on the International Computer Driving License (ICDL) and the Cambridge IT Skills Certificate programmes, which are standard benchmarks for computer use skills.

Furthermore, a Board has been established for the quality of vocational training in the ICT industry in 2005 under Ministerial Decree No. (10) for the year 2005 The general objectives of the Council are as follows:

¹⁶ <http://www.uob.edu.bh/>

¹⁷ <http://www.elearning.uob.edu.bh/>

¹⁸ <http://www.ega.gov.bh/>

- (a) Develop plans for training in coordination with the institutions of information and communication technology and accredited training institutes;
- (b) Prepare the national workforce through specialized vocational training and to engage in work in the institutions of the ICT sector;
- (c) Work to increase the percentage of Bahrainisation in the industrial sector through the provision of qualified national manpower and trained;
- (d) Organize training programs for the development and upgrading the skills of workers in this sector;
- (e) Contribute to the dissemination of awareness among citizens with regard to jobs and opportunities available in the sector of information and communication technology, and opportunities for development and progression;
- (f) Promote and develop cooperation and partnership with the institutions of information and communication technology;
- (g) Insure using the international concepts and standards in the training.

V. BUILDING CONFIDENCE AND SECURITY IN THE USE OF ICTS

1. Government Electronic Activities

Appropriate deployment of ICT plays the important role in the success and efficiency of the government ministries/ organizations. That is acknowledged as Electronic Transaction Law includes the mandate for relevant government organization to set the rules and procedures regulating the government electronic activities.

2. Intellectual Property Law

Government commitment towards providing "comfortable virtual zone" is also shown by many numbers of Intellectual Property related legislation that has been enacted recently. One of the adverse effects technology has introduced is that can be easily deployed to breach the intellectual property rights of others. The infringement can be affected effortlessly, sometime unintentionally. In order to draw the lines as to what one can and cannot do with others' intellectual property rights, these legislations have been introduced:¹⁹

- Law No. (14) for the year 2006 amending some provisions of Law No. (1) for the year 2004 on patents and utility models;
- Law No. (16) for the year 2006 amending some provisions of Law No. (16) for the year 2004 on the protection of geographical indications;
- Law No. (16) for the year 2006 amending some provisions of Law No. (16) for the year 2004 on the protection of geographical indications;
- Law No. (12) for the year 2006 amending some provisions of Law No. (7) for the year 2003 on Trade Secrets;
- Law No. (1) for the year 2004 on patents and utility models;
- Information Minister's decision No. (2) for the year 2007 on the behavior of the system under the financial rights of the author and owners of related rights;
- Law No. (7) for the year 2003 on Trade Secrets;
- Law No. (22) for the year 2006 on the protection of copyright and related rights;
- Law No. (5) for the year 2006 on the designs of integrated circuits;
- Law No. (11) for the year 2006 in the matter of trademark;
- Law No. (19) for the year 2005 approving the accession of the Kingdom of Bahrain to the Patent Law Treaty and the rules of the Executive;

¹⁹ Not official translation for the above laws and regulations.

- Law No. (44) for the year 2005 approval of "b-c-v" on the patent system of the States of the Gulf Cooperation Council and the Rules executive;
- Law No. (12) for the year 2004 the approval of the patent system of the States of the Cooperation Council for the Arab States of the Gulf;
- Decision of the Minister of Industry and Trade No. (54) for the year 2006 by issuing the executive regulations of Law No. (1) for the year 2004 on patents and utility models;
- Law No. (16) for the year 2004 on the protection of geographical indications;
- Law No. (35) for the year 2005 to amend Article (5) of Law No. (7) for the year 2003 on Trade Secrets.

In addition to the laws identified above, there are several drafts laws that have been tabled in the parliament. These are:

- The computer crimes laws;
- The freedom of information laws;
- The data protection laws.

These drafts of laws have been prepared in response to some incidents that call for the attention to have the matter properly addressed by way of legislation. The draft of computer crimes laws was prepared in 2004, the draft of freedom of information law was proposed in 2005 while the draft of the data protection laws put forward recently to balance the effect that may come with introduction of the freedom of information laws.

A. USE OF ELECTRONIC TRANSACTIONS AND DOCUMENTS

The growing investments to make e-commerce reliable, safe and secure are transforming e-commerce from just an idea to a reality with unlimited future of development.

Understanding the importance of e-commerce and its positive impact on the local economy, the Kingdom of Bahrain has released the following eCommerce related laws and regulations:

1. *Electronic Transaction Law*²⁰

There are three interrelated pieces of legislation on this aspect. Enacted in 2002, the Electronic Transaction Law has, among other, sanctioned the legality of electronic transaction, the recognition electronic signature, etc.

Legislative Decree No. 28 of 2002 with respect to Electronic Transactions

The Electronic Transactions Law covers and provides an appropriate legal framework for all electronic, commercial and transactional activities.

2. *Regulation on Electronic Signature*

In pursuance to the provision of the Electronic Transaction Law, two sets of Regulations on Electronic Signature had been enacted. The first set is meant to regulate the commercial entities intend to offer services on electronic signatures. The other is meant to appoint one government organization to act as a Certification Service Provider to provide such services to both the government sector and the public at large.

²⁰ <http://www.legalaffairs.gov.bh/basicsearch/tabid/217/Default.aspx>

Ministerial Order No. 4 of 2004 with respect to the Accreditation and Supervision of Certification Service Providers (CSPs)

e-commerce is emerging as a way of doing business and communicating across public and private networks. An important requirement of electronic commerce is the ability to identify the originator of electronic information in the same way that documents are signed using a hand-written signature. Essentially a CSP means entity or a legal or natural person who issues identity certificates for the purposes of electronic signatures, or provides other services to the public related to electronic signatures. Bahrain's CSP Ministerial order was prepared based on the most advanced international electronic signatures standards and best practices and primarily from both the European Union (EU) and the International Organization for Standardization (ISO).

B. PRIVACY AND DATA PROTECTION AND COUNTERING MISUSE OF ICTS

Within the framework of privacy and data protection and countering misuse of ICT, the Kingdom of Bahrain has drafted several laws that have been tabled in the parliament. They are:

- The computer crimes laws;
- The freedom of information laws;
- The data protection laws.

These drafts of laws have been prepared in response to some incidents that call for the attention to have the matter properly addressed by way of legislation. The draft of computer crimes laws was prepared in 2004, the draft of freedom of information law was proposed in 2005 while the draft of the data protection laws put forward recently to balance the effect that may come with introduction of the freedom of information laws.

VI. ENABLING ENVIRONMENT

A. LEGAL AND REGULATORY ENVIRONMENT

1. *National Intellectual Property Laws and Regulations and International Agreements*²¹

Bahrain has joined the World Trade Organization (WTO). Following its membership in the WTO and the ratification of a number of international trade agreements as follows:

- WIPO Convention, since June 1995;
- Paris Convention (Industrial Property), since October 1997;
- Berne Convention (Literary and Artistic Works), since March 1997;
- PCT (Patents), since March 2007;
- PLT (Patent Law Treaty), since December 2005;
- Madrid Protocol (Registration of Marks), since December 2005;
- Nice Agreement (International Classification of Goods and Services), since December 2005;
- TLT (Trademarks), since March 2007;
- WCT (WIPO Copyright Treaty), since December 2005;
- WPPT (WIPO Performances and Phonograms Treaty), since December 2005;
- WTO: Member and Signatory to TRIPS Agreement, since January 1995.

With these, Bahrain has been adapting its legal and regulatory systems to accommodate trademark, patent and intellectual property rights (IPR) protection as follows:

²¹ TLT – December 2006 http://www.wipo.int/edocs/notdocs/en/tlt/treaty_tlt_45.html

(a) *Industrial Property*

The kingdom of Bahrain has recognized the importance of the IPR system in attracting more investment. As a result Bahrain has issued the IPR related laws, as highlighted below:

- Patents: Law No. 1 of 2004 on Patents and Utility Models, as amended by Law No. 14 of 2006.
- Trade Marks: Law No.11 of 2006 on Trademarks.
- Industrial Designs: Law No. 6 of 2006 on Industrial Designs.

(b) *Copyright and Related Rights*

Law No. 22 of June 2006 on Copyright and Neighbouring Rights.

(c) *Other Country-Specific Legislation or Activities*

- Utility Models: As above, under Patents.
- Protection of Undisclosed Information: Law No 7 of 2003 on Trade Secrets, as amended by Law No. 12 of 2006.
- Layout Designs (Topographics) of Integrated Circuits: Law No. 5 of 2006 on Layout-Designs of Integrated Circuits.

2. Telecommunications Regulatory Framework

In 2002 King Hamad bin Isa Al Khalifa issued the legislation that regulates matters related to telecommunication. This legislation also gave rise to the establishment of the Telecommunications Regulatory Agency that has the overall authority upon matters set out within the legislation.

Besides outlining the objectives, functions, appointment and termination of membership, and other matters accidental thereto, including the administrative ones, it explicates that no person may undertake telecommunication related business without obtaining the license for the same. The legislation goes further by providing the procedure to apply for the license, its renewal, amendment, revocation and the types of licenses. All in all the legislation provides certainty in many telecommunications aspects. Which remains to be seen is whether the existing provisions will be sufficient to cater to concerns and needs that will arise as the result of the implementation of e-government. Hence it is desirable to have a study being undertaken on the matter. The TRA has issued several regulations such as:

- Decision No. (5) of 2008, Amending some provisions of the Regulation issued by Decision No. 2 of 2008 requiring the licensed operators to establish a database of pre-paid subscribers to mobile telecommunication services;
- Regulation 4 of 2008, Regulation Enacting the National Numbering Plan.

3. Regulating the Internet

All the websites operating in Bahrain must register with the Ministry of Information. Pursuant to Section 41 of the Legislative Decree No. 48 of 2002 and Decree No. 47 of 2003, the Bahrain Internet Exchange (BIX) was established as a "not-for-Profit" Organization under it the Ministry of Transportation. The role of BIX is to connect Internet Service Providers, in order to increase local traffic and content, as well as reduce the cost of purchasing international bandwidth. It is a policy to encourage investors to set-up ISPs and reduce the barriers of entry into the Bahraini market. Further laws such as cyber crime law, electronic transactions law and e-government bylaw exist to provide adequate protection to the users.

4. Internet Censorship

According to Article (19) of Decree-Law No. (47) for the year 2002 on the organization of the press, printing and publishing in the Kingdom of Bahrain, the Kingdom has a security authorities monitor the Internet and forbid access to lists of websites, including among others adult, political and religious sites and newsgroups.

5. Software Piracy²²

The piracy rate of the Kingdom of Bahrain has dropped to 57 per cent in 2007 from 60 per cent in 2006 according to a study conducted by the Business Software Alliance due to the anti-piracy effort taken by the government and industry.

B. DOMAIN NAME MANAGEMENT

According to the Ministerial of Cabinet Affairs order no. (3) of 2008 in respect to organization of registration and use of the domain name of the Kingdom of Bahrain, (.bh) is the top level of the global domain name assigned to the Kingdom of Bahrain, which is composed of two characters in accordance with the international standard ISO 1-3166 of the International Organization for Standardization.

Therefore the domain name will contain the top level domain and the and the country code top level domain (. bh), Below are some examples, but not limited to:

TABLE 5. BAHRAIN'S AVAILABLE TOP-LEVEL DOMAINS

Domain	Target
gov.bh	Provision of government bodies and ministries and bodies and public institutions and in its ruling.
biz.bh	It is intended for businesses and individual entrepreneurs.
com.bh	It is intended for businesses, or owners of the names and trademarks.
coop.bh	Assigned to the cooperative societies.
edu.bh	Provision of educational institutions and rehabilitation - public or private - of the post-secondary education such as universities or institutes.
med.bh	It is intended for organizations that provide medical services such as hospitals, clinics, pharmacies and the like.
net.bh	Allocations for the owners of information networks and Internet service providers and institutions working in the field of information.
org.bh	Provision for non-profit organizations such as associations and private enterprises, trade unions and clubs.
pro.bh	Devoted to the self-employed lawyers, engineers, auditors and others who are required by law for the conduct of their license to do so.
sch.bh	Allocated to kindergartens, primary schools and secondary schools, public or private.
travel.bh	Assigned to the institutions working in the field of travel and tourism.
int.bh	Provision of international organizations or their branches or offices of the local or regional.
name.bh	Provision of the names of natural persons

Within that the Telecommunications Regulatory Authority is in charge to do the following:

- Issue regulations and policies relating to the administration and management of the domain name.
- Establish a system of top level of the global domain name on the Kingdom of Bahrain.
- Manage servers (Root Servers) for the domain name.
- International coordination with regard to domain name.

²² 2007 global piracy study- Business Software Alliance

C. STANDARDIZATION IN ICT

The Kingdom of Bahrain has taken some steps to follow the international standards in the production and usage of ICT. For instance, specifications for producing the optical discs have been decided by ministerial order number (63) for the year 2006.

Moreover, most of the Banks located in Bahrain are follows the Secured Sockets Layer (SSL), which is a protocol that transmits your communications over the Internet in an encrypted form. SSL ensures that the information is sent, unchanged, only to the server you intended to send it to. Another technology developed is the Europay MasterCard Visa - (EMV) protocol, which encodes the credit card numbers stored on merchants' servers. This standard, created by Visa and MasterCard, enjoys wide support in the banking community in Bahrain.

D. SUPPORTING MEASURES

Bahrain has lunched several initiatives to improve the ICT innovation one of them is the Bahrain e-Content²³ Award which is organized by the eGovernment Authority in Bahrain and Bahrain Internet Society and inspired by WSA - the World Summit Award in order to select quality e-content and promote creativity and innovation in the development of new media applications in Bahrain. The award covers the following categories:

- e-Learning
- e-Culture
- e-Media:
- e-Science
- e-Government
- e-Health
- e-Business
- e-Banking
- e-Entertainment
- e-Inclusion

VII. ICT APPLICATIONS

A. E-GOVERNMENT

As part of the service enablement e-government strategy implemented in the Kingdom, 167²⁴ key services have been identified for delivery through electronic channels. These form part of the more than 300 services provided by 32 government agencies included as part of the as-is and e-readiness study for the development of the e-government strategy. The services have been identified based upon criticality of service (citizen demand and importance) and feasibility of electronic delivery. In addition, procedural information, forms and status checking for all services can be provided electronically and are not part of the 167 services.

Currently a few of the identified 167 services are electronically enabled and are provided through departmental websites, while a few more are available through the eGovernment Portal. Based on the current level of e-readiness of the agencies, the service enablement strategy proposes the electronic enablement of

²³ <http://www.bea.bh>

²⁴ Based on the 25th session of the Supreme Council of Information and Communication Technology (SCICT) held on Thursday, 5th of February, 2009, the number of eServices for 2009-2010 has been increased from 167 to 200 eServices.

167 services over a period from 2007-2010. To enable these services in the phasing proposed, thirteen key agency projects proposed as part of the e-government strategy for Bahrain.

Below are 13 of the Bahrain e-government initiatives:

1. Case management system
2. Customs and ports
3. Education
4. e-Health Services
5. e-Office
6. e-Procurement
7. G2B portal
8. G2E portal
9. National Employment Programme
10. National data set
11. Real estate services
12. Social information system
13. Tourism services

Other e-government led initiative to provide each Bahraini with an affordable PC with an Internet connection to increase IT literacy and allow access to e-government services are as follow:

1. *PC INet*

Through this initiative the e-government aims to provide each Bahraini with an affordable PC with an Internet connection to increase IT literacy and allow access to e-government services

2. *e-Government Benchmarking*

The purpose of conducting an international benchmarking study is to assess progress regularly in relation to global developments. This will allow the Kingdom of Bahrain to continuously improve its e-government programme by learning through benchmarking with the top five e-government leaders from Asia, Europe and the Americas

3. *e-Government Awards Programme*

Driven by the e-government program vision, eGovernment Excellence Award is granted to individuals and organizations leading the information and communication technology (ICT) wave in the Kingdom of Bahrain, whilst promoting the adoption of the e-government initiative. It aims to raise awareness of the government's vision and reward those contributing to the development of Bahrain's electronic community. Nominees for the awards are categorized as:

(a) *Government*

Includes government ministries and organizations that are involved in the e-government projects or activities. The Government Award includes:

- eContent
- eService
- eMature
- eProject
- Appreciation
- eEconomy

(b) *Citizens*

Includes citizens that actively use the eGovernment Portal²⁵

- eCitizen
- eParticipation

(c) *Business*

Includes business partners and organizations that provide business and technical solutions to the government or promoting the development of the economic sector. The Business Award includes:

- Best IC T Solution Provider
- E-Economy

4. *e-Government Magazine*

“e” Magazine, a publication that will engage with the ever evolving and increasingly significant paradigm in government transformation - e-government. The need for this magazine has been felt due to the novelty of the e-government experience in the region and the criticality of the same in the holistic development of Bahrain and GCC. The aim of this publication is to increase the awareness of the community about e-government and to illustrate the benefits that accrue to the masses from the “e” enablement.

The e-government has identified the below channels to deliver its services through:

- National Toll Free Contact Centre
- Common Service-Centres (including self-service kiosks)
- Mobile Gateway Enabling m-Government
- e-Government Portal

Below are examples of current services provided by e-government:

(a) *Smart Card*

The ‘Smart Card’, also known as the ID card, combines three current cards into one. There fore, the Smart Card includes the Immigration ID card, issued by the General Directorate for Passports, Nationality and Residence (GDNPR), the Driving license, issued by the General Directorate for Traffic (GDT) and the Central Population Registry (CPR) card, issued by the Central Informatics Organization²⁶ CIO.

(b) *Bahrain Investors’ Centre*²⁷

The Bahrain Investors’ Centre was established in 2001 by the Ministry of Industry and Commerce. The centre is considered as one-stop-shop for starting a business and other investment related services, it has all Ministries required to start a business and represented in one space and connected through their IT systems. Furthermore, it provides access to multiple private sector services required by start ups.

²⁵ <http://www.bahrain.bh>

²⁶ <http://www.cio.gov.bh>

²⁷ <http://www.moic.gov.bh/MoIC/En/More/Resources/BahrainInvestorsCenter>

(c) *eVisa*²⁸

The Bahrain eVisa System is an online application service which has been launched in 2008. The application connects to General Directorate of Nationality, Passports and Residence systems and databases in order to automate visa procedures and monitor each visa application for policy and security constraints. The eVisa service is available for residents from over 30 countries wishing to visit the Kingdom, whether for business or pleasure. All information on the requirements and procedures for visa applications is available online. The application can be made and completed online, with an option to track its status, saving time-consuming visits to Embassies. This service will attract people wishing to visit the country, as the process is quick and simple.

B. E-BUSINESS

In the Kingdom of Bahrain several e-business forms applied in the private and public sector. The most common form is the e-payment. The e-payment has been implemented by the e-government authority as its part of its commitment to offer flexible payment solution to the public, the authority has offer an e-payment to some of the governmental e-services either by debit or credit cards. Within that the current statistics shows the total number of electronic financial transactions via the eGA National portal²⁹ reached to 84,250 with a total amount of BD 5,178,204.

In addition, the national airline company (Gulf Air)³⁰ offer an e-ticketing service in which it allow the customers to book and bay for the tickets.

Another form offered by most of the commercial banks in Bahrain is the Internet Banking in which it allows the customer to pay credit card bills, transfer money or check the deposits.

C. E-LEARNING

1. *Government Schools*

The Kingdom of Bahrain has taken a seriesof steps in implementing the ICT in several aspects in the education sector. For instance, the King Hamad's Schools of the Future project could be consider as a fundamental turning point from the traditional teaching-learning process to a future process based on technological employment. It completely changes the limited resources of the traditional class environment to an open interactive motivated environment which improves the learning process.

In 2007 each government school has been linked with the ministry. Also, the ministry has established an electronic grade system and a special system for school administrative process.

2. *Public Library*

Bahrain National Bank Public Library in Muharraq is distinguished for using computer technology. It has within its pavilions more than 15 PCs linked to a local network. Another PC is linked to the Internet. These computers are used in all processes handled by the researcher beginning with searching information resources and ending by borrowing books. All this takes place easily and smoothly. The PC linked with Internet can be used to search for information. Internationally allowed CDs can also be used in that context. Furthermore, a PC is available especially for using CDs.

²⁸ <http://www.evisa.gov.bh/>

²⁹ <http://www.bahrain.bh>

³⁰ <http://www.gulfair.com>

D. E-HEALTH

Ministry of Health in the Kingdom of Bahrain has built an Information and Communication Technology Strategy (ICT). The Health ICT Strategy which was launched in 2001 is defined to cover the Ministry of Health (MOH) as a corporate policymaker as well as administrative directorates and health service providers in hospitals, clinics, and health centers. It works in parallel with the Ministry of Health Strategic Direction and Framework for Action, in addition to focusing on innovative ideas to support the issues created from uncertainty in areas such as Health insurance, Human Resource Management, Materials Management, Drug management and cost containment.

The current ICT application in the health sector could be summarized as follows:

1. *Software Services*

The current software packages are available in the government hospitals and centers. The currently applied software packages mainly cover basic functions such as Admission- Transfer and Discharge, Financials, Radiology, Lab, Appointments, and Logistic services. Most of the applications are handling data and are connected by point to point interfaces.

2. *Infrastructure Services*

Ministry of Health has implemented many Local Area Network (LAN) & Wide Area Network (WAN) Infrastructure projects. These implementations contributed to improving the availability and quality of services by providing access to various systems. All buildings within Salmaniya Medical Complex (SMC) are interconnected through a fiber optic network underground. This minimized the communication cost, and provides fast and reliable access to the network resources. In addition, all departments are connected to and managed from one central location through 100Mbps Ethernet network where all resources are maintained and supported by expert people. Different data types are accessed through the network 1. Clinical Data (Radiology, Pathology, Medical Records, etc) Administrative data (Financial, Personnel, Material Management, Drug control, Laundry, etc)

3. *Communication Services*

Internet website was developed with the aim of publishing MoH services on the web. The website contains valuable information about health services, facilities, activities as well as health education, health conferences and health societies. Public information includes health centers contact numbers, opening hours, medical checkup guidelines for students and domestic workers and other information required by the public sector. Intranet website has been developed with the objective of communication and sharing of information. The intranet enables MoH employees, departments and functions to get easier access to quality information improve speed of communication and reduce the number of papers floating around. Most of the health functions have web pages on the intranet. Groupware email service was introduced and implemented successfully. Most of the departments including Head office have been connected through Groupware. This tool is considered the standard for internal communication within the ministry.

E. E-EMPLOYMENT

Information technology and the Internet were broadly used to announce and receive job applications. A number of parties in the government and private sector announce and receive job applications on their websites.

For instance, the LMRA³¹ (Labour Market Regulatory Authority) in Bahrain has provided an excellent system using the ICT facilities aimed towards protecting the rights of migrant workers, and it has been possible to reach out to both employees and employers in a transparent manner. As for the workers seeking a job in Bahrain, the status of their work visa and details regarding their new job could be studied by visiting the LMRA website prior to their leaving the countries. Hence, there is no need for middlemen, thereby preventing corruption to a large extent. The work visa applications are generally processed by LMRA within 3 days, after which, it is sent to the Central Informatics Organization. A CPR (card of population registry) card will be allocated within two days. The General Directorate of Nationality, Passports and Residence takes five days to process the visa after the security clearance. Once the visa is ready, the employer receives an online notification from LMRA. The status of application can also be tracked online. In case the application is reject, the reason for the same is also shown online, and the customers can re-apply. Even the payment can be made online, and in the case of rejected applications, even the money is returned through a credit note.

VIII. CULTURAL DIVERSITY AND IDENTITY, LINGUISTIC DIVERSITY AND LOCAL CONTENT

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

ICT is being utilized by the government organizations such as the Ministry of Information and Bahrain Center of Studies and Research (BCSR) to further Bahraini culture. The Ministry of Information publishes the cultural magazine online and there is a facility to download even the archived sections.

Similarly, the Bahrain Center for Studies and Research offers its digital library for all registered members and will also start with sales of digital and traditional content before the end of 2007 through the e-government portal and its own website.

B. LOCAL AND NATIONAL DIGITAL CONTENT DEVELOPMENT

Most of the ministries web sites are available in English and in Arabic.

IX. MEDIA

A. MEDIA INDEPENDENCE AND PLURALISM

The Constitution of Bahrain guarantees freedom of opinion, thought, expression, and belief, which is reflected in media freedoms. Owned by the private sector, the Bahraini press is independent and operates in a democratic environment. This is underlined by Legislative Decree No. 47 of 2002 on the organization of the printing and publishing. Therefore, by 2007 there were more than 112 newspapers and magazines published in Bahrain.

B. THE MEDIA AND ITS ROLE IN THE INFORMATION SOCIETY

Media is one of the most important awareness-raising means in the information society, some issues of which are covered by a large number of media in Bahrain, that deal with either technological or family and cultural matters. For instance, one of the Bahraini's newspapers specifies a whole page to present the latest ICT application.

Additionally, one of e-government initiatives is e" Magazine, a publication that will engage with the ever evolving and increasingly significant paradigm in government transformation - e-government.

³¹ <http://www.lmra.bh/>

Therefore; the distribution circulation to private and the public sector will continue between 9,000 to 11,000 copies per issue, and will sent to all CEOs, COOs, CIOs, managers of technology, telecommunications and banking establishments, top governance, educational institutes, government agencies, hotels and airport lounges, and all investment sites and centers.

X. INTERNATIONAL AND REGIONAL COOPERATION

Bahrain is linked to the rest of GCC region by the Fibre Optic Gulf7 (FOG) network, a 1,300 km cable system jointly owned by the national telecommunications operators of Kuwait, Bahrain, Qatar, and the United Arab Emirates.

In addition, Bahrain has created a solid and resilient communication network with other Arab states through ArabSat.

A. WSIS FOLLOW-UP

Bahrain is actively working towards the achievements and realization of the WSIS Objectives. Particular interest in elevating the level of ICT infiltration in the education is given to improve all levels of education. The deregulation of telecommunication sector, high level of e-government services and high level of freedom to access information over various media are all strong indicators of Bahrain's involvement.

Finally, Bahrain various ICT NGO's and societies are actively involved in activities related to the realization and of the WSIS objective. In May 2005, Bahrain Hosted the Global ICT Summit. The event was the first of its kind in the region and attracted international attention to the developments taking place in Bahrain.

However, at the moment, there is no website available at the regional level to share the lessons and good practices. As a remedial step in this direction, under the e-government program, an essential condition of sign off on any project is the lessons learnt document to capture the leanings from the project to ensure effective knowledge management. These documents will provide ready content for contribution from Bahrain as and when such a website comes up at the regional level.

XI. MILLENNIUM DEVELOPMENT GOALS

A. PROGRESS TOWARD ACHIEVING THE MDGs³²

The Kingdom of Bahrain believes in the importance of the Millennium Development Goals (MDGs), since they correspond to its foundations and objectives. In Bahrain, a country with a limited surface area and limited natural resources, people are the most important resource. As a result, the human resources are given the priority in all development policies. The below section highlights the main process of work in achieving the MDGs:

1. Goal 1: Eradicate Extreme Poverty and Hunger

Extreme poverty is zero³³ in the Kingdom of Bahrain. The Kingdom has concentrated on developing programs and projects to expand the middle class and uplift needy families suffering from low incomes. The Government has taken a number of steps in this regard, including:

³² UNDP Bahrain. Towards Achieving the Millennium Development Goals: Progress of Work

³³ UNDP Bahrain. Towards Achieving the Millennium Development Goals: Progress of Work:
<http://www.undp.org.bh/MdgGoal=1.html>

- Developing a national strategy to uplift needy families;
- Signing an agreement with the World Bank to assess the social protection network by conducting an analytical study on the characteristics of families receiving social assistance;
- Developing a national plan to aid the growth of productive families, including the establishment of production units and centers of excellence for product development and marketing centers for those products;
- Working on the establishment of the Family Bank with a capital of \$15 million in support of income-generating activities and micro-enterprises.

2. Goal 2: Achieve Universal Primary Education

Bahrain provides free education to everyone and has been able to include all children in primary school age in schools. Also, education is widespread and developed at other levels. The net enrolment ratio reached 99 per cent³⁴ during the academic year 1997/1998. The Kingdom has also made considerable progress in combating illiteracy, especially in young people, with a literacy rate of nearly 100 per cent. Bahrain has achieved universal free primary education, but the challenge remains in making higher level education accessible, mandatory, and free of charge.

3. Goal 3: Promote Gender Equality and Empower Women

Bahrain has made numerous achievements in empowering women and achieving gender equality in education and public positions. Females prevail over males in all stages of education both in number and excellence, and this has positively affected the entrance of Bahraini women into the labor market and increased their employment opportunities in the public and private sectors. In recent years and with the support of the Kingdom, women have taken leading positions in the Cabinet, the diplomatic corps, Representative and Shura Councils. Currently there are 10 Bahraini women in the Shura Council, one in the representative council and one woman holds the position of a minister.

4. Goal 4: Reducing Child Mortality

Generally speaking, under-five child mortality is low in Bahrain, with levels close to those prevailing in developed countries. In Bahrain, the under-five child mortality rate amounted to about 10 deaths per thousand live births in 2006 and the infant mortality rate (under one year) reached 7.6 deaths per thousand live births. The same applies to vaccination against measles, which recorded a 100 per cent coverage level as well, indicating the success and effectiveness of the child care system³⁵. Health statistics indicate a significant decrease in under-five child mortality rate per 1,000 live births from 22 deaths in 1990 to about half (10.1) in 2006, as a result of the remarkable progress in services designed for this age group, such as periodic checkups from birth to the age of six.

5. Goal 5: Improve Maternal Health

Welfare services are provided in Bahrain before and during pregnancy through the presence of qualified personnel who offer pre-pregnancy health consultations; there are also clinics that follow-up pregnant women and offer periodic tests, such as laboratory tests and ultrasound x-rays, to ensure the wellbeing of the fetus. The average number of prenatal visits is 5 to 6, as recommended by World Health Organization (WHO), and patients are treated according to its guidelines. Safe delivery is also available in health centers that are easily accessible in all regions of the country, along with post-pregnancy services, which include periodic tests, contraception, and the early discovery of risky cases.

³⁴ Ministry of Education

³⁵ UNDP Bahrain. Towards Achieving the Millennium Development Goals: Progress of Work

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

Bahrain has succeeded in eliminating traditional contagious diseases such as malaria, measles, smallpox, and hepatitis. For instance, no deaths were recorded due to malaria from 1995 to 2004. Death ratios associated with tuberculosis decreased by more than two-thirds between 1996 and 2006 as a result of monitoring reported cases, examining incoming foreigners, early treatment and following the recommended treatment by the WHO, which was put into effect in 1999³⁶. Bahrain still faces the challenge of HIV/AIDS despite the progress made in combating and treating it. The number of officially registered cases is less than actual cases due to the concealment of the disease for religious and social considerations. The health policy adopted for fighting HIV/AIDS consists in the examination of segments most likely to be affected.

7. Goal 7: Ensure Environmental Sustainability

Environmental stability is one of the most important national priorities. The most eminent environmental challenge that Bahrain currently faces is the ongoing deterioration of coastal and marine environments, the increasing demand for energy and water, air pollution, hard and liquid waste-management, and the deterioration of agricultural lands.

8. Goal 8: Develop a Global Partnership for Development

Bahrain has greatly benefited from the policy of international cooperation to develop its economy. The following are the initiated projects to meet this goal:

- Improve the institutional capacity of the parliament in Bahrain;
- Enhance institutional capacity global economic environment and governance;
- Establish e-training system in Bahrain : creating knowledgeable workers

B. USE OF ICT FOR ACHIEVING THE MDGs³⁷

Challenges presently facing Bahrain's educational sector is largely with respect to improving educational standards across all levels of enrollment. The government has initiated numerous projects aimed addressing issues of training and development of its human resources across both public and private sectors. Hence to achieve goals 2 and 8 Kingdom of Bahrain in cooperation with UNDP is establishing an E-training system. Under this project, the UNDP will support efforts that will allow public sector employees to receive training in a systematic, individual-capacity based manner. Bahrain's Civil Service Bureau would therefore take primary responsibility for implementation of annual training programmes developed in consultation with their managers as part of their annual performance evaluations. The goal is to develop knowledge based institutions by merging training, active learning, and knowledge sharing to maintain a cutting-edge competitive work force.

XII. BUILDING THE ICT SECTOR

A. ICT FIRMS

The Bahrain Economic Development Board (EDB) is a public agency with an overall responsibility for formulating and overseeing the economic development strategy of Bahrain, and for creating the right climate to attract direct investment into the Kingdom. EDB has considered the ICT as one of investment opportunities for Bahrain. Therefore, EDB promotes Bahrain as an excellent location for ICT investment

³⁶ UNDP Bahrain. Towards Achieving the Millennium Development Goals: Progress of Work

³⁷ UNDP - Bahrain

because of low office lease rates, excellent broadband and telecoms connections and lower labour costs than our neighbours.

As a result, many of ICT software companies open in Bahrain including Software AG of Germany and three of India's largest IT companies, Satyam, Zain (Vodafone), TCS and WIPRO. Hewlett-Packard has also signaled its intention of making Bahrain a regional centre by acquiring a major Bahrain IT business, NCS.

B. R&D AND INVESTMENTS IN THE ICT SECTOR

The Technology Park is an imperial example for a research and development investment held in Bahrain. The project is aimed at further assisting the establishment of the Technology Park, which will contribute to the on-going efforts of the country to create export oriented technology based enterprises and help diversify the local economy from oil driven incomes.

C. CONTRIBUTION OF ICT SECTOR IN THE NATIONAL ECONOMY

The contribution of the communication sector in Bahrain has reached to BD 216.6 million³⁸ in 2007 or 3 per cent out of the national GDP in current prices. The following table shows the contribution in the communication sector from 2003-2008.

TABLE 6. CONTRIBUTION OF THE ICT SECTOR IN THE NATIONAL ECONOMY, 2003-2008³⁹

Item	2003	2004	2005	2006	2007	2008*
Value Added- US\$	343.4	409.6	446.3	518.1	576.1	576.1
Contribution to Current GDP %	3.5	3.6	3.3	3.3	3.1	2.6

*Note**: Provisional Data

³⁸ <http://www.cio.gov.bh/default.asp?action=category&id=201>

³⁹ <http://www.cio.gov.bh/default.asp?action=category&id=201>

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ANNEX I

Core ICT Indicators

Indicator	2005	2006	2007	2008
Population	888,824	960,425	1,039,297	1101,230*
1-Indicators on ICT infrastructure and access*				
Fixed Line Services				
Number of fixed lines	193,520	194,196	203,541	220,386
Fixed telephone lines per 100 inhabitants	21.8	20.2	19.6	20.0
Number of residential fixed lines	121,918	122,343	116,951	130,121
Mobile Services				
Prepaid Mobile Subscribers	635,277	756,268	923,702	1,210,163
Post-paid Mobile Subscribers	131,826	151,165	192,277	230,619
Total Mobile Subscribers	767,103	907,433	1,115,979	1,440,782
Total mobile subscribers per 100 inhabitants	86.3	94.5	107.4	130.8
Internet Services				
Dial-up Subscribers	28,867	21,466	6,425	4,508
Broadband Subscribers	21,432	38,628	73,563	109,994
Total Internet Subscribers	50,299	60,094	79,988	114,502
Total internet subscribers per 100 inhabitants	5.7	6.3	7.7	10.4
Number of residential fixed broadband subscribers	18,764	34,858	62,476	85,419
*Source: Telecommunication Regularity Authority - TRA				
2-Indicators on access to, and use of, ICT by households and individuals*				
Proportion of households with a radio	.....	76.2%	.....	.....
Proportion of households with a TV	.....	98.3%	.....	.....
Proportion of households with a fixed line telephone	.....	79.5%	.....	.....
Proportion of households with a mobile cellular telephone	.....	97.2%	.....	.....
Proportion of households with a computer	.....	70%	.....	.....

Proportion of households with Internet access at home	.....	40.6%	.....	.....
*Source: Household Income and Expenditure Survey 2005-2006 – Central Informatics Organization				
3-Other ICT Indicators*				
Number of employees in telecommunication sector	2,216	1,942	2,380	2,470
Telecommunication sector Contribution to Current GDP %	3.3	3.3	3.1	2.6**
Telecommunication revenue (BD in million)	235	253	285	3303
*Source: National Account- Central Informatics Organization **Provisional data Telecommunication Regulatory Authority (TRA)				

* Population is based on Telecommunication Regulatory Authority (TRA) estimation.