

Distr.
LIMITED
E/ESCWA/ICTD/2011/4/Add.13
15 November 2011
ORIGINAL: ENGLISH

ECONOMIC AND SOCIAL COMMISSION FOR WESTERN ASIA (ESCWA)

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

United Nations
New York, 2011

This document has been reproduced in the form in which it was received, without formal editing.

The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of ESCWA.

Bibliographical and other references have, wherever possible, been verified.

Mention of firm names and commercial products does not imply the endorsement of the United Nations.

Preliminary copy.

11-0313

CONTENTS

ABBREVIATIONS	vii
INTRODUCTION	1
I. THE ROLE OF THE GOVERNMENT AND ALL STAKEHOLDERS	2
A. NATIONAL INFORMATION SOCIETY POLICIES AND E-STRATEGIES.....	2
B. PUBLIC/PRIVATE PARTNERSHIP (PPP) AND MULTI-SECTOR PARTNERSHIP (MSP)	5
C. ROLE OF NON-GOVERNMENTAL ORGANIZATION.....	6
II. ICT INFRASTRUCTURE	7
A. MARKET STRUCTURE AND REGULATORY LANDSCAPE.....	7
B. PENETRATION OF ICT SERVICES.....	8
C. INITIATIVES AND PROJECTS FOR ICT INFRASTRUCTURE AND DEVELOPMENT OF NEW SERVICES.....	10
D. ICT CONNECTIVITY	10
E. INTERNET INFRASTRUCTURE	11
III. ACCESSIBILITY TO INFORMATION AND KNOWLEDGE	12
A. ACCESS TO INFORMATION AND PUBLIC INFORMATION.....	12
B. MULTI-PURPOSE COMMUNITY PUBLIC ACCESS POINTS	13
IV. ICT CAPACITY-BUILDING	13
A. ICT IN EDUCATION AND TRAINING.....	14
B. TRAINING PROGRAMS FOR CAPACITY BUILDING IN THE USE OF ICT	15
V. BUILDING CONFIDENCE AND SECURITY IN THE USE OF ICTS	16
A. ONLINE AND NETWORK SECURITY.....	16
B. USE OF ELECTRONIC TRANSACTIONS AND DOCUMENTS	17
C. PRIVACY AND DATA PROTECTION.....	17
D. COUNTERING MISUSE OF ICTS	18
VI. ENABLING ENVIRONMENT	18
A. LEGAL AND REGULATORY ENVIRONMENT.....	19
B. DOMAIN NAME MANAGEMENT.....	20
C. STANDARDIZATION IN ICT	21
D. ICT INVESTMENTS AND GOVERNMENT-SUPPORTED FACILITATION MEASURES	21
VII. ICT APPLICATIONS	24
A. E-GOVERNMENT.....	24
B. E-BUSINESS.....	26
C. E-LEARNING	27
D. E-HEALTH.....	27
E. E-EMPLOYMENT	28
VIII. CULTURAL DIVERSITY AND IDENTITY, LINGUISTIC DIVERSITY AND LOCAL CONTENT	29
A. USE OF ICT IN SUPPORT OF CULTURAL AND LINGUISTIC DIVERSITY.....	29
B. LOCAL AND NATIONAL DIGITAL CONTENT DEVELOPMENT.....	29
C. ICT SOFTWARE, TOOLS, AND R&D PROGRAMMES IN ARABIC LANGUAGE PROCESSING.....	30
D. ARABIC DOMAIN NAMES	31
IX. MEDIA	31
A. MEDIA DIVERSITY, INDEPENDENCE AND PLURALISM	31
B. THE MEDIA AND ITS ROLE IN THE INFORMATION SOCIETY	32
C. CONVERGENCE BETWEEN ICT AND THE MEDIA	32
X. INTERNATIONAL AND REGIONAL COOPERATION	33
A. FINANCING OF ICT NETWORKS AND SERVICES.....	33
B. INFRASTRUCTURE DEVELOPMENT PROJECTS.....	33

C.	WSIS FOLLOW-UP	34
XI.	BUILDING THE ICT SECTOR	35
A.	ICT FIRMS	36
B.	GOVERNMENT FACILITATION	37
C.	CONTRIBUTION OF ICT SECTOR IN THE NATIONAL ECONOMY	37
D.	R&D AND INVESTMENTS IN THE ICT SECTOR	39
XII.	MILLENNIUM DEVELOPMENT GOALS – MDG	40
A.	PROGRESS TOWARD ACHIEVING THE MDG	40
B.	USE OF ICT FOR ACHIEVING THE MDGS	44
	REFERENCES	46
	ANNEXI	48
	Core ICT Indicators	48

LIST OF TABLES

TABLE (1) – ICT SECTOR ACHIEVMENT OF NIS STRATEGIC GOALS	4
TABLE (2) – STATUS OF THE NATIONAL ICT STRATEGY IN JORDAN	5
TABLE (3) – TELECOM MARKET CONDITIONS:	8
TABLE (4) – FIXED TELEPHONE LINE SUBSCRIBERS AND PENETRATION	8
TABLE (5) – MOBILE LINE SUBSCRIBERS AND PENETRATION	9
TABLE (6) – INTERNET USERS AND PENETRATION RATE	9
TABLE (7) – INTERNET SUBSCRIBERS AS PER TECHNOLOGY	9
TABLE (8) – PC AND LAPTOP PENETRATION, 2009	10
TABLE (9) - PERCENTAGE OF INDIVIDUALS, AGE 5 YEARS AND ABOVE, WHO USED THE INTERNET DURING THE PAST 12 MONTHS ACCORDING TO SERVICE TYPE, PLACE OF RESIDENCE, AND PROVINCE	12
TABLE (10) - KNOWLEDGE STATIONS TRAINEES BETWEEN THE YEARS 2001 AND 2010	15
TABLE (11) - STATUS OF ONLINE AND NETWORK SECURITY	18
TABLE (12) -STATUS OF E-GOVERNMENT PORTAL	24
TABLE (13) – PERCENTAGE* OF FAMILIES WISHING TO OBTAIN E-GOVERNMENT SERVICES DEPENDING ON THE METHOD OF RECEIVING SERVICE, PLACE OF RESIDENCE, AND PROVINCE, 2009	25
TABLE (14) - USE OF E-COMMERCE AT PRIVATE SECTOR ENTITIES	26
TABLE (15) - THE STATUS OF E-BUSINESS AND E-COMMERCE LEGISLATIONS IN JORDAN	26
TABLE (16) - MAJOR E-READINESS INDICATORS IN 2008 AT GOVERNMENT PRIMARY AND SECONDARY SCHOOLS	27
TABLE (17) - ICT TOP PRIORITY RESEARCH ISSUES	30
TABLE (18) - STATUS OF MEDIA OUTLETS IN JORDAN	31
TABLE (19) -STATUS OF JORDAN'S COMMITMENT TO DIFFERENT INTERNATIONAL AGREEMENTS	34
TABLE (20) - ACTIVITIES PERFORMED BY ICT AND ITES COMPANIES IN JORDAN ACCORDING TO ISIC 4.0	36
TABLE (21) - ICT & ITES SECTOR STATISTICS 2009	37
TABLE (22) -GROWTH IN THE IT SECTOR (2003 – 2009)	38
TABLE (23) - CUMULATIVE INVESTMENT IN THE TELECOMMUNICATIONS SECTOR BETWEEN 2005-2009 IN (MILLIONS US DOLLARS)	38
TABLE (24) - STATUS OF JORDAN R&D IN ICT	40
TABLE (25) PROGRESS IN ACHIEVING THE MDGS IN JORDAN	41
TABLE (26) JORDAN PROGRESS IN ACHIEVING THE MDGS INDICATORS	41

LIST OF FIGURES

FIGURE (1) - THE GROWTH IN INTERNET PENETRATION BETWEEN Q1 2009 AND Q3 2010.....	4
FIGURE (2)SPECIALIZED VALUE-ADDED SERVICES PROVIDED TO INCUBATED COMPANIES AT THE I-PARK	22
FIGURE (3) -INCUBATED AND GRADUATED CODMPANIES AT THE I-PARK BETWEEN 2003 AND 2010	22
FIGURE (4) –PART-TIME VERSUS FULL-TIME HIGH-VALUE ADDED JOBS CREATED AT SUPPORTED COMPANIES AT THE I-PARK BETWEEN 2003 AND 2009	23
FIGURE (5) -HIGH-VALUE ADDED PRODUCTS AND SERVICES CONTRIBUTING TO JORDAN’S INTELLECTUAL CAPITAL	23

ABBREVIATIONS

3G	Third Generation
ADSL	Asymmetric Digital Subscriber Line
ATM	Asynchronous Transfer Mode
AVC	Audio Visual Commission
BPO	Business Process Outsourcing
ccNSO	Country Code Name Supporting Organization
ccTLD	Country Code Top-Level Domains
CEH	Certified Ethical Hacker
CERT	Computer Emergency Response Team
CISA	Certified Information Systems Auditor
DSL	Digital Subscriber Line
ENP	European Neighborhood Partnership Agreement
EU	European Union
FDI	Foreign Direct Investment
FTTH	Fiber to The Home
FWA	Fixed Wireless Access
FBWA	Fixed Broadband Wireless Access
GAC	Governmental Advisory Committee
GB	Gigabit
GDP	Gross Domestic Product
GIP	Graduate Internship Program
HCST	Higher Council for Science and Technology
HRI	Human Resources Information
IANA	Internet Assigned Numbers Authority Acronym
ICANN	Internet Corporation for Assigned Names and Numbers
ICDL	International Computer Driving License
ICT	Information and Communications Technology
ICTAC	ICT Advocacy Council
ID	Identification
IDA	Irbid Development Cooperation
IDN	Internationalized Domain Name
IS	Information System
JEI	Jordan Education Initiative
JIB	Jordan Investment Board
ICTAC	ICT Advisory Council
IP	Internet Protocol
IPCO	Intellectual Property Commercialization Office
ISDN	Integrated Services Digital Network
ISIC	International Standard Industrial Classification of All Economic Activities
IT	Information Technology
ITES	IT Enabled Services
INT@J	Information Technology Association of Jordan
JCS	Jordan Computer Society
JEDCO	Jordan Enterprise Development Corporation
JEI	Jordan Education Initiative
JPA	Jordan Press Association
JRTV	Jordan Radio and Television Corporation
JTB	Jordan Tourism Board
KADDB	King Abdullah II Design and Development Bureau

KADF	King Abdullah II Development Fund
KPI	Key Performance Indicator
MDG	Millennium development Goal
MENA	Middle East and North Africa
MoE	Ministry of Education
MICE	Meetings, Incentives, Conventions, and Exhibitions
MoICT	Ministry of Information and Communication Technology
MoU	Memorandum of Understanding
MSP	Multi-Sector Partnership
NBN	National Broadband Network
NCC	National Contact Center
NCHRD	National Center for Human Resources Development
NIS	National Information Strategy
NITC	National Information Technology Center
NGO	Non-Government Organization
PKI	Public-Private Key Infrastructure
PPP	Public-Private Partnership
PSTN	Public Switched Telephone Network
R&D	Research and Development
RCN	Regional Cable Network
RPoA	Regional Plan of Action
RSS	Royal Scientific Society
S&T	Science and Technology
SDH	Synchronous Digital Hierarchy
SGN	Secured Government Network
SMEs	Small to Medium Enterprises
SMS	Short Message Service
SRSF	Scientific Research Support Fund
SRTD	Support to Research and Technological Development and Innovation
TPJ	Technology Park of Jordan
TRC	Telecommunications Regulatory Commission
TV	Television
UN	United Nations
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
VSAT	Very Small Aperture Terminal
WiMax	Worldwide Interoperability for Microwave Access
WSISI	World Summit on the Information Society
WTO	World Trade Organization

INTRODUCTION

Jordan has embarked upon a progressive reform of its ICT sector since 1994; thus in 1995 The Telecommunications Law No. 13 of 1995 was passed, providing the legal basis for reform. In October 1999, the REACH initiative was presented to HM King Abdullah II by IT industry leaders; REACH laid out a clear plan of action to boost the country's nascent IT sector and maximize its ability to compete in local, regional, and global markets.

In 2003 the Government of Jordan adopted a statement of policy on the Information and Communication Technology sector reflecting government vision towards liberalizing the sector. This policy has been replaced with a new statement policy in 2007 which focuses on creating the conditions of effective competition in the ICT sector while taking into consideration the immense potential of ICT in terms of sector development and in the direct contribution that it can make to the efficiency of the wider economy and the operations of government, together with the development of Jordan's human resources.

The National ICT Strategy (NIS) 2007-2011 encapsulated the concerted and ambitious efforts of the public and private sectors in converting the 2007 Policy goals into actionable targets with concrete results over the past three years. The NIS consisted of four inter-related pillars: Connectivity, Regulation and Investment Climate, Labor Issues and Education, and Research and Development. It identified three strategic targets to be achieved by the end of 2011: Increasing internet user penetration by 50%, Increasing ICT sector revenues to \$ 3 billion dollars, and Increasing ICT employment to 30,000 jobs.

The real adoption of inclusive, committed, and harmonious ICT policies and strategies in Jordan in the last decade led to having an enabling environment that attracts investments in the ICT sector; through public and private sector partnerships locally and internationally that resulted in developing the level of ICT infrastructure, services, and facilities, aiming to provide access to good quality, diverse and affordable ICT services within the framework of an effective regulatory environment and adequate infrastructure.

As a result, ICT contribution to the GDP in 2008 reached 14.1%, 9.5% as direct contribution and 4.62% as indirect contribution by enabling other economic sectors, and it created more than 80,000 new jobs divided between direct employment in the ICT sector itself and indirect and induced employment in other economic sectors. Furthermore, the total revenue from the ICT sector in 2009 reached around 2.2 Billion US dollars whereas the total investment in the ICT sector reached around 286 Million US dollars.

I. THE ROLE OF THE GOVERNMENT AND ALL STAKEHOLDERS

The effective participation, cooperation, and partnership among different stakeholders including the government and the private sector formed the fundamental base for developing the Information Society in Jordan. The Telecommunication law no. (13) Of 1995 and its Amendments*¹ emphasized on the importance of having sound ICT policies and strategies which all stakeholders participate in forming by assigning to the Ministry of Information and Communications Technology (MoICT) the responsibility of preparing the general policy of the telecommunications and information technology sectors in the Kingdom while coordinating with stakeholders in these sectors and setting a national strategic plan in accordance with this policy. The setting of a national ICT policy has important implications for the information of stakeholders in the ICT sector and for others that might consider entry to, or investment in, this sector.

A. NATIONAL INFORMATION SOCIETY POLICIES AND E-STRATEGIES

National ICT Policy

The government of Jordan recognized the importance of the role played by the ICT, therefore Jordan has embarked upon a progressive reform of its ICT sector which has started since 1994. In 2003 the Government of Jordan adopted a statement of Government policy on the information and communication Technology sector reflecting government vision towards liberalizing the sector². The mentioned policy has been replaced with a new statement policy in 2007 "current policy" which focuses on creating the conditions of effective competition in the ICT sector, as the government believes that the ICT sector could be developed and fostered by stimulating the competition in the ICT sector and relying on the market forces³.

The current policy statement sets forth a number of important goals in the ICT sector and identifies required efforts in order to ensure the effective accomplishment of those goals. It takes into consideration the perceived needs of the market, the Jordanian economy as a whole, social development factors, and the rapid pace of technological change. It also ensures its alignment with existing legislation, bilateral agreements, the World Trade Organization (WTO) Agreements, the general undertakings made as part of the World Summit on the Information Society (WSIS) Geneva and Tunis goals and plans, and the U.N. Millennium Development Goals.

The statement of government policy sets the guidelines for the Telecommunications Regulatory Commission (TRC) for regulating ICT services "to ensure the provision of high quality telecommunications and information technology services to users at just, reasonable and affordable prices; and, by so doing, to make possible the optimal performance of the telecommunications and information technology sectors."⁴

The 2007 policy statement recognizes the immense potential of IT both in terms of sector development and in the direct contribution that it can make to the efficiency of the wider economy and the operations of government, together with the development of Jordan's human resources. It also recognizes the impact of increasing convergence between the IT and Telecommunications sectors, and Telecom and Audio-visual

¹Law No. (13) Of 1995 has been amended by virtue of the Temporary Amending Law of the Telecommunications Law No. (8) of 2002, which is published in the Official Gazette, No. 4416, dated 17.02.2000.

² Statement of Government Policy on the Information and Communications Technology Sectors and Postal Sector 2003: http://www.moict.gov.jo/downloads/ICT_Policy_2003.pdf

³ Statement of the Government Policy 2007 on the Information and Communications Technology and Postal Sectors 2007:

<http://www.moict.gov.jo/Gov%20POLICY%20%202007%20ICT%20and%20Postal%20Sectors%20Eng%20an.pdf>

⁴ Article 6 of the Telecom Law

services. Major goals of the 2007 policy statement include the need to increase PC ownership, Internet access, local and Arabic language content, and implementing e-government services.

National ICT Strategy

The National ICT Strategy (NIS) 2007-2011⁵ encapsulates the concerted and ambitious efforts of the public and private sectors in converting the 2007 Policy goals into actionable targets with concrete results over the past three years. NIS identifies the roles of all stakeholders from public sector, i.e. Ministry of Information and Communication Technology (MOICT), Telecommunication Regulatory Commission (TRC), National Information Technology Center (NITC), and other governmental organizations of related stake at the strategy, and private sector, represented by business associations; i.e. the Information Technology Association (Int@j) and Jordan Computer Society (JCS).

The NIS consists of four inter-related pillars: a) Connectivity, b) Regulation & Investment Climate c) Labor Issues & Education d) Research and Development and identifies three strategic targets to be achieved by the end of 2011:

- Increasing internet user penetration by 50%
- Increasing ICT sector revenues to \$ 3 billion dollars.
- Increasing ICT employment to 30,000 jobs.

Strategic goals are comprised of a set of objectives and anticipated outcomes with corresponding actions that need to be implemented within clearly defined interrelated frameworks of programs, projects and initiatives. The NIS includes Key Performance Indicators (KPIs) through which the progress of Strategy implementation is assessed periodically.

MOICT in cooperation with INT@J conducted a strategic planning exercise towards the end of 2010 and accordingly developed an action list, with specific KPIs, emanating from the National ICT Strategy for the year 2011 with an aim to create the highest Impact on the already identified strategic goals. Actions fall under six focus areas:

- Innovation Culture
- ICT Sector's Maturity
- Consumption of Technology in Vertical Sectors
- Private Sector and Academia's Partnership
- Online and Mobile Content And Applications
- Business Process Outsourcing

The exercise resulted in a clear set of recommendations for the next NIS to be developed towards the end of 2011 taking into consideration lessons learnt from the implementation of the 2007-2011 NIS with respect to operational sustainability and monitoring and evaluation and identified critical success factors for future consideration.

Table (1) summarizes ICT sector achievement towards the targets designated per each strategic goal based on the results of the 2009 ICT sector survey. The 2010 Sector survey results shall be published in the second quarter of 2011.

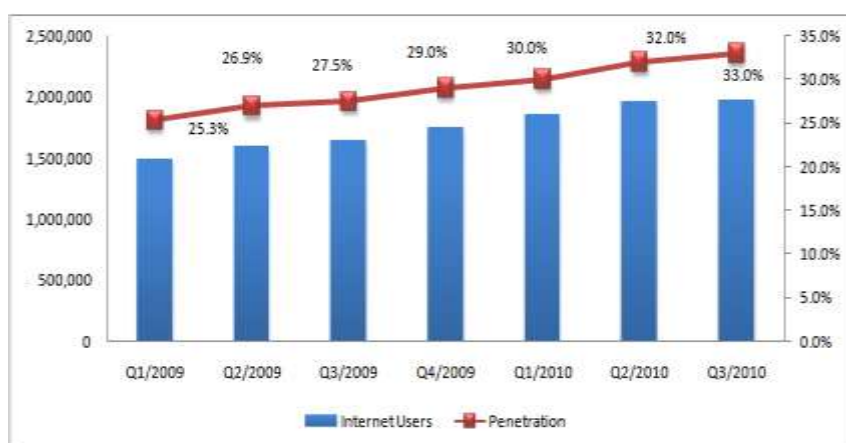
⁵ National ICT Strategy of Jordan (2007-2011), http://www.intaj.net/sites/default/files/National-ICT-Strategy-of-Jordan-2007-2011_0.pdf

TABLE (1) – ICT SECTOR ACHIEVMENT OF NIS STRATEGIC GOALS

Strategic Indicator	2007	2009	End of 2011 target
Internet usage penetration (%)	11%	29%	50%
ICT sector revenues (USD)	1.5 billion	2.2 billion	\$ 3 billion dollars
ICT sector employment (jobs)	16,000	22,000	30,000 jobs

Internet usage penetration increased considerably since the end of 2009 and reached 33% in the third quarter of 2010. Figure (1) illustrates the growth in internet penetration between Q1 2009 and Q3 2010⁶.

FIGURE (1) - THE GROWTH IN INTERNET PENETRATION BETWEEN Q1 2009 AND Q3 2010



Relevant National E-Strategies

It's also worth mentioning that Jordan has a number of national e-strategies that are aligned with and compliment the NIS such as the R&D strategy for ICT, the E-government strategy, and the national e-commerce strategy. The (2008-2012) E-commerce Strategy vision is: "Jordan to become a 'leading' e-commerce centre in the region through the exploitation of its information technology capacity and the creativity of its people"⁷. The strategy has four strategic goals:

- To increase the wealth of the Jordanian people through the development and exploitation of e-commerce.
- By 2012, to be a regional leader for IT systems development, applications and services associated with e-commerce.
- To be one of the leading countries in the region that uses e-commerce as a channel for selling goods and services to consumers.

⁶ Source: TRC website: trc.gov.jo :

http://www.trc.gov.jo/index.php?option=com_content&task=view&id=2160&lang=english

⁷ Source: National e-Commerce Strategy: <http://moict.gov.jo/Proposed%20Ecommerce%20Strategy%20Final.pdf>

- To be one of the leading countries in the region that uses e-commerce as a channel for domestic and international business to business collaboration and trade.

Table (2) below summarizes the status of the National ICT strategy in Jordan. The pace of implementation is considered "Good" based on the level of achievement of strategic goals highlighted in Table (1) above and the accomplishment of many of the actions included in the National ICT strategy

TABLE (2) – STATUS OF THE NATIONAL ICT STRATEGY IN JORDAN

ICT strategy exists:	Yes
Year of adoption	2007-2011
Government Agency in charge (in English and Arabic)	Ministry of Information and Communications Technology وزارة الاتصالات وتكنولوجيا المعلومات
Pace of implementation (Excellent/ Good/ Average/ Limited)	Good

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

ICT Advisory Council (ICTAC), which is a public-private sector committee, chaired by the Minister of ICT represents a formal partnership of public and private sector stakeholders with a mission to develop, advise and track the long-term strategic vision for the ICT sector by advocating reforms that enable the growth and development of Jordan's ICT Sector. ICTAC has been very active in 2010 in addressing pressing issues and obstacles the ICT sector was facing. As a result of its efforts, the Jordanian Cabinet endorsed a number of exemptions for the information and communications technology sector (ICT) in 2010, this included:

- Exempting WiMax Companies, providing broadband telecommunication services from annual frequency fees provided that these exemptions reflect on the services provided to people either in terms of prices or expansion outside the capital.
- Exempting Fixed Broadband Wireless Access (FBWA) operators from customs for the equipment and element components deployed for Wi-Max infrastructure in return for expanding their network in the rural areas.
- Unifying sales tax on Internet connections for households and enterprises to 8% regardless of used technology.
- Exempting revenues generated by IT exports and Business outsourcing from income tax.

Jordan is also pursuing a deliberate path to incorporate ICT in government services and strategic local and international partners from the private sector are involved in the implementation of these services through different Public Private Partnership (PPP) approaches. A new Public Private Partnership (PPP) legal framework is being currently developed by the government of Jordan to facilitate the implementation of major strategic initiatives and programs by the private sector through globally recognized financing and management models. It is anticipated that the National Broadband Network (NBN), will be one of those major projects.

The government of Jordan, through MoICT, signed strategic agreements with international ICT companies such as Microsoft, Cisco and Oracle to encourage them to invest in Jordan and capitalize on their experience in growing and developing the national ICT sector while partnering and working closely with national ICT firm to facilitate ICT deployment in government entities, building the capacities of governmental organizations and employees, and training fresh ICT graduates through innovative internship programs. For example Microsoft strategic agreement includes implementing potential e-government projects, such as setting up the National Public-Private-Key Infrastructure (PKI) in Jordan an supporting ICT

internship programs. Another example is Cisco's launching and completion of UNIFEM 15 Cisco Network Academies in public universities and schools in Jordan focusing on enhancing IT and networking skills for Jordanians graduated, and equipping them with skills to enter the job market through the provision of 280 hours of hands on training.⁸

C. ROLE OF NON-GOVERNMENTAL ORGANIZATION

Non-Government Organizations (NGOs) contribute substantially to the development of the information society in Jordan. In the year 1986 Jordan Computer Society (JCS) was established to serve individuals as well as companies working in the ICT sector in terms of delivering specialized training, awareness sessions and scientific workshops, in addition to networking activities. Furthermore, REACH initiative was launched in the year 1999 by the establishment of INT@J; The Information Technology Association of Jordan with the support of the United States Agency for International Development (USAID) which also supported the development of the (2007-2011) NIS.

INT@J was founded as an industry-support association for Jordan's ICT sector. Building on the nation's core asset of highly educated and skilled human resources, INT@J envisages for Jordan's ICT sector to establish the position of a leading regional ICT hub and an internationally recognized exporter of ICT products and services. INT@J mission is to advance and promote the constituents it represents in both, the local and global markets, and over the years. Thus INT@J was very active in advocating ICT industry issues through the ICT advocacy council as well as in supporting different ICT initiatives such as the Graduate Internship Program that was launched in 2009, the conduction of the Middle East and North Africa (MENA) ICT Forum in 2010, and the arrangement of ICT Trade Missions, such as the trade mission to Oman in January, 2011. INT@J expanded its mandate to include ICT Enabled Services (ICTES) in order to extend its support to organizations that largely base their business model on technology and communications. This strategic expansion came as a natural outcome of the ICT sector's success.

NGOs that support the ICT sector include software developers, hardware providers, telecommunications & data services providers, call centers, help desks, system integrators, and even non-ICT & ICTES organizations such as banks, management consultants, law firms, and non-profit organizations, in addition to individuals working in the ICT sector. An Example is Jordan network, which is a non-profit organization that has been working on the application of national programs is applying the Tawasol network in cooperation with (MOICT), Ministry of planning, Microsoft and UNDP with an aim to raise the efficiency of small and medium-sized enterprises through the integration of ICT applications in their daily transactions in order to raise production efficiency and marketing ability, and increase sales.

Jordan Education Initiative (JEI) is another non-profit organization that plays an essential role in deploying ICT in education in Jordan, it commenced in June 2003 as a public private partnership involving the government of Jordan, the international and local private sector, NGOs and donors under the auspices of the World Economic Forum's Global Initiative. It ran until November 2006 in this format and now has been established as a non-profit-organization. The initiative focuses around improving education in discovery schools, developing the technology industry and providing effective life-long-learning for Jordanians. Some of JEI's accomplishments in 2010 include: conducting an evaluation study on Intel Teach Program's implementation at government schools, launching the first Innovation Education Forum in Jordan in cooperation with Microsoft, and signing a memorandum of understanding (MoU) with the Ministry of Education to enforce the use of computerized curriculum covering mathematics, science, Arabic and English language as well as information management.⁹

⁸ Source: Ministry of Information and Communications Technology website: http://www.moict.gov.jo/MoICT_StrategicAgreements.aspx

⁹ Source: JEI official website – Media Center / Press Release: <http://www.jei.org.jo>

II. ICT INFRASTRUCTURE

Infrastructure is central in achieving the goal of digital inclusion, enabling universal, sustainable, ubiquitous and affordable access to ICTs by all. It takes into account relevant solutions already in place in developing countries and in countries with economies in transition, to provide sustainable connectivity and access to remote and marginalized areas at national and regional levels.

A. MARKET STRUCTURE AND REGULATORY LANDSCAPE

The Telecommunication Regulatory Commission (TRC) is responsible for regulating the Telecommunication sector in accordance with the Government Policy, and thus for achieving many of the objectives set out in the government policy statement including the promotion competition in the ICT sector. Upon that, the TRC has issued several regulatory decisions and instructions that address many regulatory issues such as the quality of service, interconnection, pricing, and numbering and allowed the building, operation, and management of public telecommunication networks and/or the provision of different telecommunication services through granting individual and class public licenses. Total number of licenses granted as of the end of February 2011 was (25) individual licensees and (53) class licensees. Individual class licensees use scarce resources such as numbers, spectrum frequencies, and rights of way, whereas class licensees don't.

Telecommunication infrastructure in Jordan is diversified and operated by many players in the sector. In the fixed market, there are three types of fixed local access/infrastructure deployed in Jordan, the first type is based on the legacy copper infrastructure which is operated and maintained by Orange fixed, and the other types of access network are green field network based on fixed wireless network (FWA) and Fiber to the home (FTTH) where Jordan TV Cable & Internet Services has constructed a small scale metropolitan FTTH network in a limited area of Amman, the capital of Jordan.

Orange fixed, the fixed incumbent operator, provides a ubiquitous national fixed access network. Orange fixed also operates ATM data network which aggregates the broadband and narrow band traffic originated by end users. Orange Fixed is in the process of replacing the ATM backbone with Ethernet GB. Orange fixed is also operates a national IP backbone and provide international IP connectivity.

Most fixed alternative operators currently have limited core network IP infrastructure in place and are interconnected with orange fixed access network. However, the TRC is in the process to implement a regulatory decision by which it will enable fixed alternative operators to use the infrastructure of Orange fixed copper local loop; this will give the operators an advantage to provide voice call services for the end user without an extensive asset investment, increasing the competition level in the fixed market.

In the Mobile market, Jordan is ranked the first as the most competitive mobile market in the region. There are four public mobile wireless service providers to provide mobile telecommunication service in Jordan. This competitive environment leads to an increase in mobile rate penetration, which has reached to 106% in Q3 of 2010, with 6,455,000 subscribers¹⁰. This has been achieved with a dramatic decrease in tariff rate which could be seen as the lowest rate in the region. The three leading Mobile Network Operators (Zain, Orange and Umniah) offer similar broad baskets of mobile services to customers. Those services consist of a range voice call related services and Data transfer services such as FPRS and EDGE technologies. The first introduction to Third Generation (3G) services has accrued in 2010, provided by Orange Mobile, as they are the first operator granted the license. The second 3G operator is expected to provide its service in 2011.

The Internet market developed significantly over the last three years. Internet service providers rely on the narrowband and broadband infrastructure to provide internet service to their customers. In the early

¹⁰ Source: TRC website: trc.gov.jo

stages when internet service has been introduced in the country, narrowband internet service (i.e Dial Up) dominated the internet market, but this has been changed recently in favor to broadband internet service due to the policy adopted and steps taken by the TRC towards reducing barriers to market entry and creating a new market entry possibilities, by which it enables alternative broadband infrastructure based on FBWA technologies to enter the market and to compete with the traditional legacy copper PSTN infrastructure upgraded by Digital Subscriber Line (“DSL”) technology (mainly Asymmetric Digital Subscriber Line – “ADSL”).

The TRC has granted Fixed Broadband Wireless Access (FBWA) licenses to operate such networks in the 3.5, 3.6 and 5.4 GHz frequency bands to five operators, namely: Umniah (3.5 GHz), Mada (3.5 GHz), Metrobeam (3.6 GHz), AtcoClearwire Jordan, now Wi-tribe (3.6 GHz), and The Blue Zone East/Jordan (5.4GHz). All four operators in the 3.5 GHz and 3.6 GHz use the WiMax standard. The Licensee in the 5.4 GHZ band has not yet started operation.

A third broadband access infrastructure is based on fiber. Jordan TV Cable & Internet Services has constructed a small scale metropolitan FTTH network in a limited area of Amman. Moreover, high quality internet services are available through leased line, ISDN, ATM, frame relay and satellite. By end of the third quarter of 2010, broadband subscriber (represented by ADSL and WiMAX) account to nearly 90% of total Internet subscribers. It is worth mentioning that by introducing 3G services in Jordan, another alternative broadband service is added through mobile broadband, which will take the competition among providers to a higher level. Table (3) below shows the Market condition for each defined market discussed above.

TABLE (3) – TELECOM MARKET CONDITIONS:

Market	Market Condition(Competitive, Monopoly or Duopoly)
Fixed line services	Competitive
Mobile services	Competitive
Internet Services	Competitive

B. PENETRATION OF ICT SERVICES

Table (4) below shows the reduction in fixed telephone line subscribers and penetration between Q1 2009 and Q3 2010.

TABLE (4) – FIXED TELEPHONE LINE SUBSCRIBERS AND PENETRATION¹¹

	Residential	Business	Total Public Switching Telecommunication Network (PSTN)	Penetration
Q1/2009	336,224	177,603	513,827	8.8%
Q2/2009	328,304	177,657	505,961	8.6%
Q3/2009	325,756	178,179	503,935	8.5%
Q4/2009	322,837	178,401	501,238	8.4%
Q1/2010	319,166	179,438	498,604	8.3%

¹¹Source:http://www.trc.gov.jo/index.php?option=com_content&task=view&id=2158&lang=english

Q2/2010	318,328	180,950	499,278	8.3%
Q3/2010	316,844	180,588	497,432	8.0%

Table (5) below shows the growth in mobile line subscribers and penetration rates between Q1 2009 and Q3 2010.

TABLE (5) – MOBILE LINE SUBSCRIBERS AND PENETRATION¹²

Quarter No./Year	Prepaid	Postpaid	Total	Penetration
Q1/2009	4,874,997	443,200	5,318,197	91%
Q2/2009	5,104,144	447,021	5,551,165	94%
Q3/2009	5,561,295	458,798	6,020,093	101%
Q4/2009	5,549,856	464,510	6,014,366	101%
Q1/2010	5,688,303	477,530	6,165,833	103%
Q2/2010	5,758,688	491,141	6,249,829	103%
Q3/2010	5,950,321	504,374	6,454,695	106%

The following table shows the growth in internet users and penetration rate between Q1 2009 and Q3 2010.

TABLE (6) – INTERNET USERS AND PENETRATION RATE¹³

Quarter No.	Internet Users	Penetration
Q1/2009	1,479,731	25.3%
Q2/2009	1,588,101	26.9%
Q3/2009	1,630,763	27.5%
Q4/2009	1,741,866	29.0%
Q1/2010	1,842,596	30.0%
Q2/2010	1,955,956	32.0%
Q3/2010	1,969,007	33.0%

The following table shows the change in internet subscribers as per technology between Q1 2009 and Q3 2010.

TABLE (7) – INTERNET SUBSCRIBERS AS PER TECHNOLOGY¹⁴

Quarter No.	Dial-Up	ADSL	Leased Line	Wi-Max	Other	Total	Penetration
Q1/2009	73,093	141,993	866	10,710	815	227,477	4.0%

¹²Source:http://www.trc.gov.jo/index.php?option=com_content&task=view&id=2159&lang=english

¹³Source:http://www.trc.gov.jo/index.php?option=com_content&task=view&id=2160&lang=english

¹⁴Source:http://www.trc.gov.jo/index.php?option=com_content&task=view&id=2160&lang=english

Q2/2009	67,706	153,453	913	18,352	908	241,332	4.0%
Q3/2009	61,120	156,215	941	28,772	1,169	248,217	4.2%
Q4/2009	41,041	166,428	1,138	34,520	1,386	244,513	4.1%
Q1/2010	35,935	176,432	925	43,556	1,393	258,241	4.3%
Q2/2010	38,914	183,153	812	69,000	1,447	293,326	5.0%
Q3/2010	20,782	184,995	1,020	79,513	7,428	293,738	5.0%

The following table shows PC and laptop penetration in relation to the place of residence and province according to the 2009 ICT diffusion and usage in household survey results.

TABLE (8) – PC AND LAPTOP PENETRATION, 2009¹⁵

	Place of Residence		Province			Kingdom
	Urban	Rural	middle	North	South	
Personnel computer (PC)	45.8%	28.1%	46.9%	35.4%	37.5%	42.9%
Laptop	12.9%	3.7%	14.2%	6.3%	7.2%	11.4%

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

Early in 2009, the TRC started a project to review the telecommunications markets in order to classify dominant market operators, propose remedies and regulatory provisions to limit the effect of dominance in said markets, and to identify the repercussions of adopting such remedies. In July 2010 the TRC issued its regulatory decision on the Fixed Broadband Market review and in December 2010, it published its regulatory decisions on dedicated capacity market reviews and the mobile markets review. It is anticipated that this project and resulting regulatory decisions will have a positive impact on the Jordanian telecommunications market in terms of setting the appropriate environment for achieving effective competition in the telecom sector and creating necessary conditions for achieving such level of competition among telecom service providers in a manner that is congruent with international best practices.

A \$500 million regional cable network (RCN) project was launched in 2010. It is to be implemented by seven ICT operators from Jordan, Turkey, Syria, Saudi Arabia and the United Arab Emirates (UAE). It entails the construction of the Middle East's longest redundant terrestrial communications infrastructure along a 7,750-kilometre round trip route. The RCN project will extend from the city of Fujairah in the UAE to Istanbul in Turkey and then to Europe and will serve as a gateway to the Internet for two billion people. The consortium of ICT operators includes Etisalat (UAE), Mobily (Saudi Arabia), Jordan Telecom/Orange Jordan, Mada-Zain Partnership (Jordan), Syrian Telecommunications Establishment (Syria), and Superonline (Turkey). Of the total length of the cable, about 10 per cent will be inside the Kingdom's borders.

D. ICT CONNECTIVITY

The government of Jordan set a Universal Service policy in the telecommunication sector in 2004 to ensure the availability and affordability of basic telecommunication services to all citizens. This policy is

¹⁵ Source: Diffusion and Usage of ICT in Household Survey, 2009. Ministry of Information and Communications Technology and Department of Statistics: http://www.dos.gov.jo/sdb_pop/sdb_pop_a/tech_2009.pdf

being continuously reviewed for the purpose of expanding the scope of coverage of telecommunications and information technology services, both horizontally and vertically, in such a way as to meet the requirements of comprehensive economic and social development in the Kingdom.

As per Universal Service Policy, Government took the responsibility for the implementation of the Knowledge Stations in 2001, the eVillages programme in 2006, and for the provision of ICT and particularly internet and other telecommunications services in education institutions. These form the basis for universal access to internet in areas of the country where it is not available by commercial means.

This has been achieved through building The National Broadband Network (NBN), an open access network established by the government of Jordan. NBN has, since its launch in 2002, connected (612) schools, (56) government entities and (45) healthcare institutions (74 healthcare institutions have been provided by fiber connection only) , including (8) Universities at 10 sites and (22) Knowledge Stations around the kingdom with a fiber-optic network based on IP/Ethernet technologies, which is now being deployed across the kingdom with a capacity of (100 Mbps) per site in a bid to provide a high speed broadband platform for Jordanian to improve both educational system and healthcare system as well as increase access to under-served areas. Future plans are being considered by the government to utilize the NBN dark fiber and poles to support and enhance the provision of their services commercially.

E. INTERNET INFRASTRUCTURE

Internet Backbone

Although Jordan is a land locked country with a small “window” to the red sea, with only one submarine cable (Flag-Europe-Asia), a fact that could be seen as barrier for the country to diversify its network and to become more connected to the world; this has been addressed by policies set by the Government to ensure that the provision of international telecommunication submarine gateway services in Jordan is not subject to any form of exclusive rights although Jordan Telecom is currently the sole provider of this service through the gulf of Aqaba. Thus, there are no restrictions or limitations on the establishment of alternative submarine gateways in Aqaba in accordance with the prevailing licensing conditions. Moreover, Telecom operators interconnect directly with their peers in Saudi Arabia through long fiber optics routes to reach Jeddah where there are many submarine landing sites apart from the one in the Aqaba. In addition to that, Telecom operators are connected through another submarine cable (MED-Nautilus) in the Mediterranean Sea.

“Hashem 1” station represents the backbone of the Internet sector in Jordan where all local Internet providers are connected to it, through the Border Gateway Protocol version 4(BGPv4). The capacity of the Internet in Jordan was estimated in 2008 at 4,615 Mbps.

Broadband Network Infrastructure, Including Delivery by Satellite and Other Systems

Broadband networks are used widely in Jordan and some examples are: ADSL, ISDN, SDH, leased lines and recently the national fiber networks, which is a national network that uses fiber optics as an infrastructure for government projects like the Secured Government Network (SGN) project. Connecting to the Internet using satellites (VSAT) is also available in Jordan. In regards with WiMax the TRC has granted five FBWA licenses to operate such networks. WiMAX subscribers have grown remarkably to reach 79,513 subscribers by Q3 2010¹⁶.

¹⁶ Source: TRC website: http://www.trc.gov.jo/index.php?option=com_content&task=view&id=2160&lang=english

III.ACCESSIBILITY TO INFORMATION AND KNOWLEDGE

ICT provides viable tools that allow people, anywhere in the world, to access the required information and knowledge almost instantaneously, and so, empowers individuals, organizations and communities. The internet, and through computers and mobile devices provides access to a variety of information such as health and education. According to the 2009 ICT diffusion and usage in households survey results, the majority of Jordanian Internet users (61,1%), use to the internet for reading electronic newspapers and magazines. Table (9) below shows the percentage of individuals, age 5 years and above, who used the internet during the past 12 months according to service type, place of residence, and province according to the 2009 ICT diffusion and usage in households' survey results.

TABLE (9) - PERCENTAGE OF INDIVIDUALS, AGE 5 YEARS AND ABOVE, WHO USED THE INTERNET DURING THE PAST 12 MONTHS ACCORDING TO SERVICE TYPE, PLACE OF RESIDENCE, AND PROVINCE¹⁷

Service type ¹⁸	Place of residence		Province			Kingdom
	Urban	Rura	Middl	Nort	Sout	
Other information	5.4	5.3	4.6	8.6	3.6	5.4
Listening to music and viewing films and TV	64.8	62.6	64.3	60.2	77.9	64.6
Reading electronic newspapers and magazines	60.8	63.7	60.6	58.6	71.6	61.1
Sending/receiving e-mails	56.0	38.3	59.4	43.6	36.0	54.2
Electronic games	60.3	55.2	60.7	56.2	61.1	59.8
Chat(typing, voice, video)	50.9	32.9	54.3	36.5	35.4	49.1
For training purposes	25.2	23.1	27.8	12.2	32.8	25.0
Health services or health information	39.5	39.2	41.7	29.3	45.5	39.5
Getting information from government	17.2	26.0	15.9	20.1	31.9	18.1
Functions	12.6	13.7	11.7	13.6	18.4	12.7
E-government services	12.9	17.5	12.0	15.6	20.0	13.4
Goods and services	8.9	5.7	9.5	4.7	11.0	8.6
E-learning	3.6	5.2	2.7	7.3	4.2	3.8
Bank services through the Internet	3.9	1.1	4.1	1.2	5.3	3.6
Selling/purchasing goods and services	2.4	1.1	2.4	0.4	5.8	2.3
Total no. of individuals in the sample	3126	349	2473	713	288	3475

A. ACCESS TO INFORMATION AND PUBLIC INFORMATION

Freedom of Access to Information Law No. 47/2007 was issued on 15/5/2007 as the first law of its

¹⁷Source: Diffusion and Usage of ICT in Households survey, 2009. Ministry of Information and Communications Technology and Department of Statistics: http://www.dos.gov.jo/sdb_pop/sdb_pop_a/tech_2009.pdf

¹⁸ Sums of percentages in each column are not equal to 100 percent due to individuals getting more than one service

kind in the Arab region. The Law includes the formation of “Information Council” which is responsible for assurance of providing information to its seekers, consideration of complaints from applicants and issuance of the proper resolution to these complaints. The law contains 20 Articles that regulate access to information and accordingly all government entities are expected to index and classify their documents and provide easy access to them.

The e-government portal (Jordan.gov.jo) provides online access to 1800 procedures related to 117 government institutions. On the other hand the ICT diffusion and usage in enterprises survey results for the year 2008 revealed that almost 97% of government entities have websites, and around 66% of those entities promote their own websites whereas 79% of them provide services through these websites¹⁹. This is an evidence of the government’s effort to allow citizens and businesses to access public information.

As part of its efforts to provide access to national ICT information, The Ministry of Information and Communication Technology adopted DevInfo²⁰ since 2009 and used it to upload all available statistical information related to ICT in Jordan, to offer a unified source of information on a national level and to reduce the efforts in producing and disseminating ICT information (<http://www.moict.gov.jo/di6web/>). DevInfo is an integrated desktop and web-enabled tool, user-friendly database system that can be deployed on desktops and on the web. The system is designed to monitor indicators and measure the progress toward goals in the ICT sector; it helps in storing and presenting data in the form of tables, graphs and maps. Free web-access is being provided through the ministry’s website since January 2011.

B. MULTI-PURPOSE COMMUNITY PUBLIC ACCESS POINTS

The Jordanian Knowledge Stations

The Jordanian knowledge stations' (www.ks.gov.jo) project was established in 2001. Its objective was to transform Jordan into a knowledge society that allows individuals from all classes, especially rural and remote societies, to make use of ICT to bridge the digital gap, develop human resources skills and increase the competitiveness and the employability, in order to achieve the economic and social development at individual and local community levels. It also aimed at training and increasing the ability of locals by giving them new skills, by attending advanced programs and training courses in the field of ICT and networks. Knowledge stations were established in partnership with different government and civil society organizations.

The number of operational knowledge stations by the end of 2010 was 180 distributed over the kingdom. More than 32 knowledge stations are located in poverty pockets areas. Since its establishment, the number of citizens who made use of the stations was over 1166500 and about 48% percent of them were males. Knowledge stations classify its activities into specific categories including capacity building in IT, offering development and awareness services to develop the society, and e-learning (in English).

IV. ICT CAPACITY-BUILDING

Capacity-building and ICT literacy are essential to allow everyone to have the necessary skills to benefit fully from the Information Society. ICT plays an essential role in achieving universal education worldwide, through the delivery of education and training of teachers, and offering improved conditions for lifelong learning, encompassing people inside and outside the formal education process, and improving

¹⁹ Source: Diffusion and Usage of ICT at Enterprises Survey, 2008. Ministry of Information and Communications Technology and Department of Statistics.

²⁰ DevInfo is a database system developed under the auspices of the United Nations with the specific purpose of monitoring the Millennium Development Goals. It is distributed royalty-free to all UN Member States.

professional skills.

A. ICT IN EDUCATION AND TRAINING

Primary and Secondary Schools

Driven by His Majesty's King Abdulla II vision to elevate Jordan's education system, the public and private sector worked closely together in deploying ICT in education to continuously enhance and develop the education system and contribute the educational reform in Jordan. Thus, the Ministry of Information and Communications Technology (MoICT) and the Ministry of Education continuously supports the development of ICT integration within public schools across the kingdom by cooperating with and supporting the Jordan Education Initiative (JEI).

Jordan Education initiative is a pioneer model for developing education utilizing technology coupled with modern teaching tools to enhance creativity and discovery at Jordanian schools. The initiative reached, since its launch till the end of 2010, 80,000 students and up-skilled hundred teachers across more than 100 Jordanian public schools. Thousands of electronic lessons have been developed and many electronic teaching tools and equipment have been deployed in schools, in order to provide students with required skills.²¹

Furthermore, MoICT provides an annual donation to the Madrasati Initiative for the development of technology enabled education in schools currently being refurbished by the Madrasati project (www.madrasati.jo). Seventy six schools have benefited from funding in the last two years (2009-2010) and another 50 are expected to benefit in 2011.

On the other hand, in the year 2006, the Ministry of Education adopted the ICDL program to spread computer literacy among teachers and civil servants. Towards the end of the year 2010, (99,183) trainees have taken part in the program, and more than (50,000) have finished the program successfully (around 51% from the total number of trainees)²².

Higher Education and Graduates

As far as the higher education is concerned, MoICT has intensified efforts to bridge the gap between workforce needs and universities' outcomes through a holistic initiative targeting IT graduates entitled "Bridge". It includes working directly with universities to lobby for the enhancement of university ICT curricula in order to meet market needs for employment. Several MoUs are being signed with universities as a framework for collaboration, during which seven of such MoUs have been signed in 2010. The MoUs cover four main subjects: replacing practical training with international recognized IT certificates, allowing replacement of elective topics with international recognized IT certificates, adding elective courses in IT faculties related to English business language proficiency and practical skills, and focusing on practical graduation projects that are relevant to important IT issues.

Another major initiative is establishing the Bridge ICT Training Academy, which aims to train graduates on much needed technical and IT skills, English language and soft skills through intensive courses. The Academy started in the 4th quarter of 2010 with a batch of 50 people and in the future it aims to train a total of 500 people annually.

Creating a higher education portal to act as a future communication bridge between students, academia and the private sector is yet another aspect of special focus to MoICT. The portal is being established in partnership with INT@J and will be launched during 2011. It includes features of sharing news and

²¹ Source: jei.org.jo

²² Source: Ministry of Education

developments of the sector as well as training opportunities and a virtual exhibition and sharing of ideas of graduation projects.

MoICT also in cooperation with the Ministry of Labor and the ICT sector associations launched a Graduate Internship Program (GIP) in 2009. The GIP is an 18-month employment program whereby the government provides a subsidy of 50% of each interns' salary during the first 12 months of employment and 25% subsidy during the next six months. (780) interns benefited from this program until the end of 2010.

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

Government Employees

E-Government in Jordan is dedicated to delivering services to people across society, irrespective of location, economic status, education or ICT ability. With its commitment to a customer-centric approach, e-Government aims at transforming the government and contributing to the Kingdom's economic and social development. And in order to achieve this, the availability of ICT and business skills is essential to implement and manage e-services by government employees who are responsible to deliver electronic services in proportion to the technology used and applied in government institutions.

The E-government Program's activities for Capacity building and human resources include:

- Develop a training strategy and plans to identify necessary training programs for public servants in order to contribute to success of the e-Government Strategy.
- Implement training plans and programs and facilitate the delivery of standardized training programs to applicable government personnel, focusing on areas of comparative advantage given its expertise and specialized e-Government needs.

The E-government Program and within the period between (2003-2010) have trained more than 10,000 government employees on basic skills to use computers including programs on ICT literacy, project management, vendor certified training programs and IT professionals. Also about 2000 employees were trained on specialized courses in technology, programming, networking, information security and project management, in addition to other specialized training in the areas of Microsoft, Oracle, Cisco, and other management software and networks in place within the governmental institutions. The program works in collaboration with all stakeholders to develop required skills and transfer knowledge on an ongoing basis to help support the implementation of e-services.

Society

In the Field of ICT capacity building and skill enhancement, all citizens, through the Knowledge Stations, are ensured the basic infrastructure facilities such as personal computers, printers, Internet access, electronic Libraries which are supported by tailored training courses in basic computer literacy and database management, and seven modules of International Computer Driving License (ICDL) certification and other customized courses that directly address the communities' needs²³. Table (10) below shows knowledge stations accomplishments in terms of training between the years 2001 and 2010.

TABLE (10) - KNOWLEDGE STATIONS TRAINEES BETWEEN THE YEARS 2001 AND 2010²⁴

Year	No. of trainees	Mal es	Females
2000-2001	13,829	44	56

²³ Knowledge Stations Official Website: http://www.ks.gov.jo/training_EN.htm

²⁴ Knowledge Stations Official Website: http://www.ks.gov.jo/training_AR.htm

2002	8,6266	43	57
2003	14,045	43	57
2004	21,280	46	54
2005	15,207	48	52
2006	9,463	45	55
2007	8,832	44	56
2008	10,699	40	60
2009	19,403	39	61
2010	21,4766	36	64
Total	142,860	43	57

V. BUILDING CONFIDENCE AND SECURITY IN THE USE OF ICTS

The sensitivity and value of telecommunication infrastructure and digital information and the need to regulate their usage and protecting them is increasing. Thus the Government of Jordan, and as part of its policy statement for the ICT sector, required the TRC to review when needed the adequacy of the security, diversity and overall resilience of Jordan's communications systems, in particular to ensure the continuity of service to Jordan's critical national infrastructure and the maintenance of the economic and social wellbeing of the country. The government of Jordan also committed to the introduction of new legislations to cover cybercrime, data protection, and privacy taking into consideration the safe use of the Internet and the protection of children, in order to promote consumer confidence in the use of ICT, while avoiding risks and protecting human rights.

A. ONLINE AND NETWORK SECURITY

Successful electronic transactions are based mainly on authenticity, data protection, confidentiality, integrity, and network security. For that, a national Public-Private-Key Infrastructure (PKI) project is planned to be deployed in 2011, by the Ministry of Information and Communications Technology (MoICT) to facilitate secure and reliable applications of online transactions, especially for e-government e-services. The expected model will provide digital certificates for government employees, businesses, and citizens. These certificates will be secured using smart cards under an integrated identity management solution.

Due to the sensitivity and the value of information used in e-transactions, public and private sector institutions are obliged to preserve the sensitive information they acquire. These institutions provide physical and logical security systems to guarantee that the information is not accessible to those who don't have the right to access it. In October 2008, the Jordanian cabinet approved the National Information Security Policies. This included 17 integrated policies covering various topics including code rules of conduct in information security, acceptable use, antivirus and malicious programs protection, security, physical, personnel, laptop, desktop, information security audit, email, and encryption and other policies in addition to the roles, responsibilities, and general duties of government employees and entities in implementing those policies. Subsequently, the E-government program at the Ministry of Information and Communications Technology conducted 9-hours awareness and training sessions to 108 security officers from various government entities to educate them about the policies and enable them to conduct relevant training sessions at their own entities. Furthermore, the Prime Ministry circulated the policies to 100 government entities.

In addition, a National Information Security Strategy is being currently under development to address issues related to protecting government's critical resources and network. This strategy will be aligned with the national strategic objectives considered in the National Agenda, and National ICT Policy. The strategy will cover cyber threats and how to defend Jordan against cyber terrorism, especially against governmental websites and information systems, National Broadband Network (including Secure Government Network),

and e-Government. Both public and private sector entities are contributing to the development of this national strategy.

On the other hand, the Jordanian cabinet approved a national Computer Emergent Response Team (CERT) Strategy in the mid of 2010. The strategy was developed by a National Information Security Committee, which recommended establishment of National CERT, to act as a focal point to manage security incidents affecting national governmental and business bodies, and to extend awareness and alerts to end users about latest vulnerabilities and threats vectors. The JO-CERT will be established under National Information Technology Center.

In addition, a number of security awareness campaigns and initiatives are being continuously conducted by different concerned government entities such as the Ministry of Information and Communications Technology (MoICT). More than 200 governmental security officials were trained through security awareness workshops and training courses, such as Certified Ethical Hacker (CEH) and Certified Information Systems Auditor (CISA). Moreover, ICT security awareness sessions are conducted from time to time in academic and military institutions.

B. USE OF ELECTROIC TRANSACTIONS AND DOCUMENTS

Electronic Transaction Law Revision

The use of e-transactions and documents is legally recognized and regulated through the Electronic Transactions Law number 85 of 2001 which also recognizes the use of e-signatures. MoICT, in cooperation with various stakeholders, including the central bank of Jordan and the TRC revised during the year 2010 the Electronic Transactions and proposed amendment to it. The proposed amendments are being currently revised by the legislative ministerial committee and expected to be approved by the cabinet in 2011 to be sent to the parliament afterwards for revision and approval. The main reasons for proposing amendments to the Electronic Transactions Law are:

- To strengthen the confidence of the public in the integrity and reliability of electronic records and electronic commerce.
- To expand the usage of electronic transactions to include all civil, commercial and governmental transactions,
- To clarify and enhance the principles and general conditions essential for the recognition of electronic signatures.

Licensing, Accreditation and Regulation of Certification Authorities Bylaw

MoICT in cooperation with the TRC drafted the Licensing, Accreditation and Regulation of Certification Authorities Bylaw and is expected to be approved by the cabinet upon passing the proposed amendments of the e-transaction law.

C. PRIVACY AND DATA PROTECTION

The proposed amendments to Electronic Transaction Law of 2010 tackle privacy and data protection by specifying the need to issue a bylaw that includes procedures for protecting data and information, including personal information to ensure confidence in e-transactions. Thus, the Ministry of Information and Communication Technology (MoICT) will start working with all concerned stakeholders to draft this bylaw upon passing the proposed amendments of the e-transaction law.

On the other hand, the Computer Crime Department at the General Security Directorate participates in TV awareness programs and conducts awareness sessions at schools to educate people about cybercrime and provide them with advises regarding how to protect their privacy in cyberspace.

D. COUNTERING MISUSE OF ICTS

As part of the Government of Jordan commitment towards providing a secured environment for e-government and e-commerce services to ensure users' and investors' confidence in ICT, an Information Systems' Crime law was proposed in 2010.

Information Systems Crime Law no. (30) of 2010

The Jordanian cabinet approved on the 3rd of August 2010 the temporary Information Systems Crime Law No (30) of 2010 which took effect after 30 days of issuance. The law identifies the elements of information systems (IS) crimes and addresses gaps in existing legislations in terms of handling information systems and cyber-crimes. Ultimately, the law aims at ensuring trust and confidence in the use of information technologies.

Two types of crimes are being addressed in the Information Systems Crime Law:

- Newly emerged crimes, and this includes:
 - unauthorized access to the information system or network
 - The cancellation, deletion, addition, destruction, disclosure, damaging, restriction, modification, changing, moving, copying, capturing, enabling others to access data and information, blocking, stopping, inhibiting the operation of, or access to an information system and the spreading of viruses.
 - Theft and usage of data and information used in financial transactions or electronic banking.
- Traditional Crimes committed using information systems and cyberspace, and this includes:
 - Influencing, directing or inciting a person who is under 18 years or mentally disabled to commit a crime.
 - Promotion of prostitution.
 - Facilitating or financing terrorist acts or contacting a terrorist group or promoting their ideas.
 - Harming the Kingdom's national security, foreign relation, public safety or national economy.

Issuing this law compliments the efforts started in 1998, when the department of computer crimes (electronic crimes) was established in the General Security Directorate in-order to deal with all crimes in which technological means were used in committing new or conventional crimes. The department is equipped with the latest systems and technical devices to perform technical investigation in computer crimes and to reveal technical truths. It is believed that issuing this new law will assist the department of computer crimes and the judicial system in dealing with IS crimes. Table (11) below summarizes the status of online and network security in Jordan.

TABLE (11) - STATUS OF ONLINE AND NETWORK SECURITY

e-transactions law available (yes/no)	Yes, and further amendments to the law will be introduced in 2011
e-signature law available (yes/no)	Yes, included as part of the e-transaction law and a draft law for licensing, accrediting, and regulating certification authorities shall be approved in 2011
Management of PKI available (yes/no)	No, yet under implementation and will be available in 2011

VI. ENABLING ENVIRONMENT

The provision of an enabling environment is crucial in order to mobilize resources and create a climate conducive to the acquisition and dissemination of ICT. Thus, the Government of Jordan continuously seeks

to create a clear and stable policy, regulatory, and legal environment within which initiatives, investment, and necessary sector regulation can proceed with confidence and paves the way for effective cooperation between the public and private sectors.

A. LEGAL AND REGULATORY ENVIRONMENT

The Telecommunications Law

In 1995, The Telecommunications Law No. 13 of 1995 was passed, providing the legal basis for reform. As a result, the Telecommunications Regulatory Commission (TRC) was established. In 2000, Jordan became a full member of the WTO. Therefore Jordan has provided its obligations regarding the telecommunications sector within the presentations made to join the organization, which included fully liberalizing the telecommunications sector by the end of 2004. In 2002, the Telecommunications Law No. (13) of 1995 was amended by the temporary Law No. (8) of 2002, whereby, the Ministry of Post and Communications was renamed as the "Ministry of Information and Communications Technology (MOICT)". Also, the 2002 Telecom Law emphasized on the independence of TRC, in addition to entrusting the TRC with regulating the Telecommunications and Information Technology services in the Kingdom.

Government Policy Statement on the Information and Communications Technology Sectors

In 2003, the Government Policy statement on the Information and Communications Technology sectors and Postal sector was issued, in pursuit of the implementation of the government obligations towards the WTO to liberalize the Telecommunications sector, which confirmed the government's intention to liberalize the fixed telecommunications sub-sector by the end of 2004 and put an end to the duopoly of the two mobile providers by the beginning of 2004.

In May 2007, the Statement of Government Policy 2007 on the Information and Communications Technology and Postal sectors was approved according to the Council of Ministers' decision dated 29/5/2007. Having achieved the basic liberalization of the telecommunications sector in Jordan, the 2007 policy statement concentrates on promoting an environment to bring about effective competition. And since telecommunications is a sector in which public utility regulation has played a traditional role, as it becomes fully competitive, such regulation may gradually be withdrawn.

On the other hand, the Information Technology (IT) sector in Jordan, beyond its communications elements, is not typically regulated. However, the government has a role in creating a supportive legal and regulatory environment while no restrictive regulations are applied to the IT sector, except in the circumstances identified in the policy statement or in matters involving national security. Accordingly, the Government of Jordan requires that open market principles apply to the IT sector and believes that the Competition Law of 2002 provides adequate safeguards against anti-competitive activity within the sector at the present time.

Convergence and Telecommunications Law Revision

Due to the rapid changes in the ICT sector and the growing convergence of telecommunications with audio-visual media and IT, the MOICT issued in October 2010, an RFP to conduct a detailed review of the Telecommunications law (Law 13 of 1995 as amended), to make an assessment of its adequacy to govern the provision of advanced and converged networks and services in a liberalized multi-operator environment, and to propose the changes or amendments that are necessary to bring it into alignment with international best practice in telecommunications law and regulation.

Online Legislations

Since growth in the ICT sector requires a supportive trusted online environment where users are

confident in their use of services and their ability to avoid risks, the government of Jordan either introduced or currently amending or proposing the following legislations elaborated in the previous chapter:

- The Information Systems Crime Law no. 30 of 2010.
- The E-transaction Law no. 85 of 2001 (*under revision*)
- The Licensing, Accreditation and Regulation of Certification Authorities Bylaw (*drafted*)
- The Privacy and Data Protection Bylaw (*to be drafted upon the approval of the e-transaction law proposed amendments*).

Intellectual Property

It is believed that the existing Intellectual Property laws in Jordan comply with international standards. Thus to maintain a trusted ICT environment, it is important to have enforcement procedures that are consistent with international best practices. Accordingly, the Government of Jordan has been working with appropriate private sector entities to support efforts to increase the awareness by consumers, industry and the legal community, among others, of the importance of Intellectual Property rights.

Competition

The Competition Law No (33) of 2004, represents a major step forward in the entry of safeguards into the structure of the economy, whereby practices, alliances and agreements, explicit or implicit, that prejudice, contravene, limit or prevent competition shall be prohibited. Certain markets served by the sectors within ICT do not yet constitute fully liberalized or open environments, whilst others do have an acceptable level of competition. The sectors are principally governed by the terms of the Telecommunications Law, which provide for regulation of activities and markets that are not fully competitive.

The Competition Law has universal application. Accordingly, the TRC took due note of its impact in the context of its regulatory activities under the Telecommunications Law, with appropriate reference to policy statement and conducted a review of the telecommunications markets and published in 2010 a number of regulatory decisions which are believed to assist in setting the appropriate environment for achieving effective competition in the telecom sector and creating necessary conditions for achieving such level of competition among telecom service providers in a manner that is congruent with international best practices.

B. DOMAIN NAME MANAGEMENT

Jordan's ccTLD under .JO and IDN ccTLD under الاردن (.alordon) in Arabic is managed by the National Information Technology Center (NITC). While .JO domain names have been in circulation since 1995, NITC got الاردن delegated at the root level in August 2010. NITC is the registry as well as the registrar for .JO and الاردن top-level domains. The registration process is conducted electronically through the registration systems www.dns.jo (for .JO domain registrations) and www.idn.jo (for الاردن domain registrations).

NITC abides to strict yet flexible policies in registering domain names. The main core of these policies is to preserve the Jordanian identity on the Internet while assuring the stability and resiliency of the top-level domains. NITC reviews these policies on regular basis and amends whatever requires amendments in accordance with the worldwide best-practice, as well as any changes to the Jordanian laws.

While not all entities acquiring Jordanian domain names have a Jordanian presence, policies permit these entities to register via a Jordanian Intellectual Property Firm since one of the pillar policies is that the Administrative Contact of any domain name must be a Jordanian address.

Since the Internet Corporation for Assigned Names and Numbers (ICANN) is the Internet Policy governing body, engagement of the Internet community is a driving force towards enhancing the Internet for the benefit of mankind. And since NITC finds itself obliged to pushing the Internet forward – locally,

regionally, and globally, it has a regular active presence in ICANN's Country Code Name Supporting Organization (ccNSO) as well as the Governmental Advisory Committee (GAC). And since NITC attends ICANN meetings on regular basis, it was committed to invite the entire Internet community to come to Amman to hold their meetings, and they were honored by receiving the good news on Dec 10, 2010 by choosing Amman to host the ICANN 41st meeting during June 19-24, 2011.

C. STANDARDIZATION IN ICT

The Jordan Institution for Standards and Metrology oversees standardization in Jordan. And in regards to ICT, a Permanent Technical Committee was established in 2008 to develop standards for ICT products and define the specifications to which devices manufactured in the Kingdom should comply with. The committee developed standards for copiers and aerials imported to Jordan.

In addition, the National Information Technology Center (NITC), which was established in 2003 in accordance with the temporary law No. (81) for 2003 entitled "Deployment of Information Technology Resources in Government Organization Law", issues the technical and operational mandatory interoperability standards for connecting government entities. It also issues other optional ICT specifications to ensure optimization in the deployment of IT resources in government. NITC also heads a Committee that is formed to assess the actual IT needs of ministries and other government organizations in terms of hardware, software and Internet services. The committee includes members from the MOICT, the General Supplies Department, the General Budget Department and a representative of the entity concerned. The Committee determines the actual IT needs to be purchased by reviewing and studying the plans and projects of concerned government organizations.

D. ICT INVESTMENTS AND GOVERNMENT-SUPPORTED FACILITATION MEASURES

A number of programs were developed to address early-stage funding issues faced by ICT entrepreneurs. Oasis 500 is one of those success stories. Major companies in the Kingdom's IT sector, with the support of King Abdullah II Fund for Development (KAJD), have launched in 2010 a fund, dubbed "Oasis 500, to help young entrepreneurs finance and market their projects. The fund provides financing to help nascent entrepreneurs in the ICT sector complete their projects and help new innovations from IT graduates and entrepreneurs. The fund, has an initial capital of JD100,000 and aims to support 500 entrepreneurs over the next five years. By November 2011, Oasis 500 funded 5 startups from its first wave of accepted entrepreneurs. These five have been given the first round of funding of an average of USD 15,000 each plus free incubation and intensive mentorship by seasoned entrepreneurs and business leaders²⁵. Oasis 500 is headquartered in Al Hussein Business Park facilities provided by the Government of Jordan.

In addition, (8) incubators were established in different parts of the kingdom to leverage innovative start-ups and projects with commercial potential. They will reach (12) by early 2011. The major IT incubator in Jordan is the iPARK which was established in 2003 by the Higher Council for Science and Technology (HCST). The HCST initiative to establish iPARK ICT Business Incubator stemmed from the belief that Incubators offer a great added value for Jordan as resources of support for start-ups and early-stage companies are scarce and entrepreneurs with experience in developing technology businesses from scratch are rare. The HCST has allocated a state of the art building, fully equipped with communications and networking facilities, furniture, IT equipment and logistical support services towards establishing an ICT Business Incubator in Amman. iPARK is situated at the Royal Scientific Society campus, and is in close to educational communities such as Princess Sumaya University for Technology, University of Jordan and enjoys access to logistical, technology, and development resources of the Royal Scientific Society. Thirty five companies have been incubated since the establishment of iPARK till the end of 2010, of which 19 have

²⁵ Source: <http://www.oasis500.com/en/newsDetails/78>

already graduated. The figures below, demonstrate the accomplishments of the iPARK since its establishment in 2003²⁶.

FIGURE (2) SPECIALIZED VALUE-ADDED SERVICES PROVIDED TO INCUBATED COMPANIES AT THE I-PARK

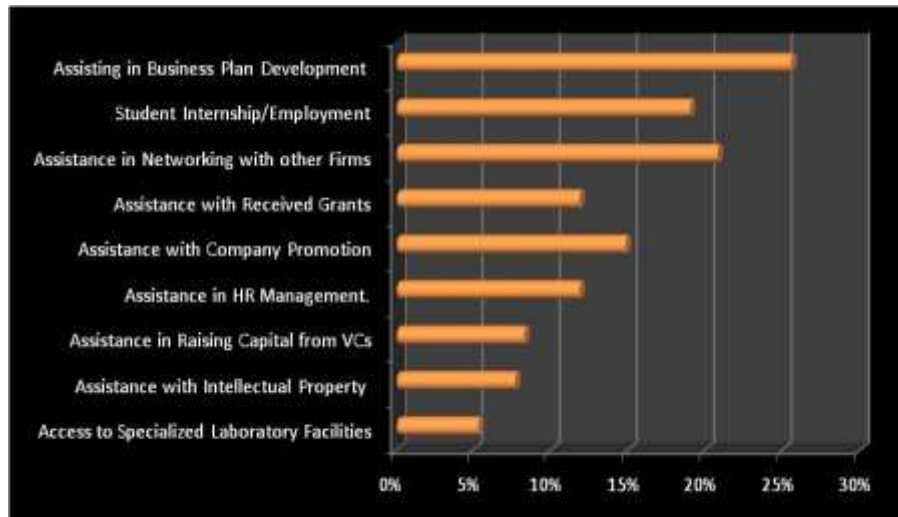
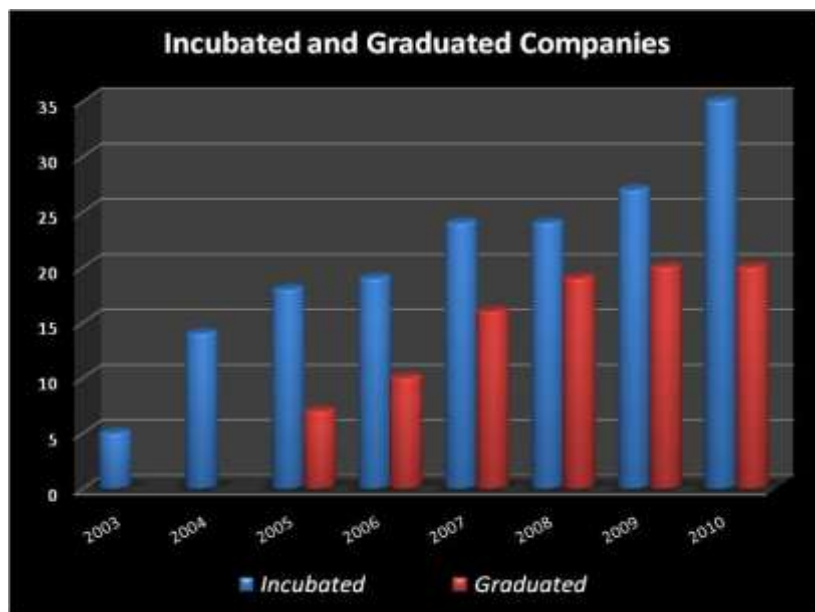


FIGURE (3) -INCUBATED AND GRADUATED CODMPANIES AT THE I-PARK BETWEEN 2003 AND 2010



²⁶ Source: www.ipark.jo

FIGURE (4) –PART-TIME VERSUS FULL-TIME HIGH-VALUE ADDED JOBS CREATED AT SUPPORTED COMPANIES AT THE I-PARK BETWEEN 2003 AND 2009

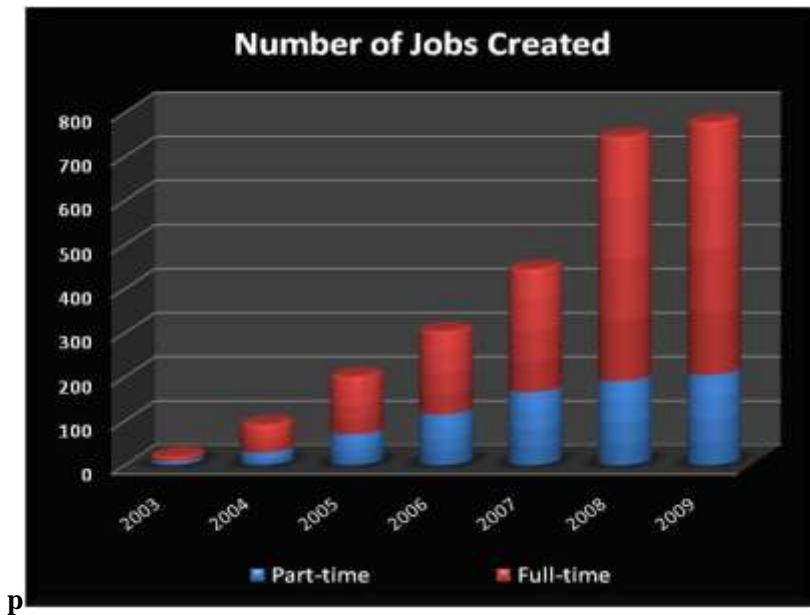
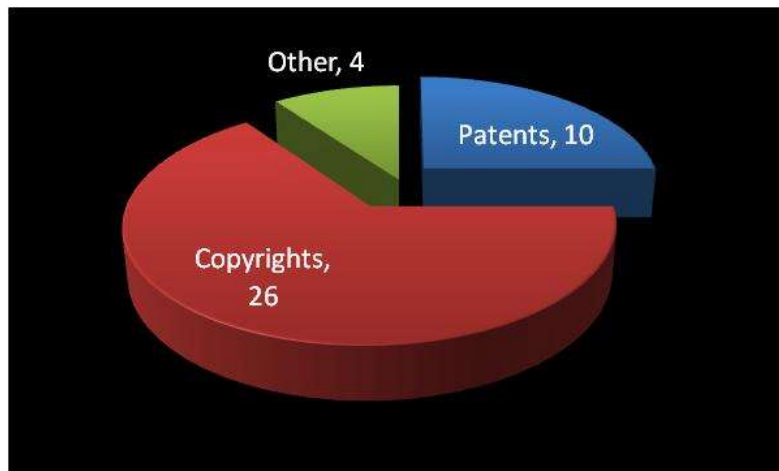


FIGURE (5) -HIGH-VALUE ADDED PRODUCTS AND SERVICES CONTRIBUTING TO JORDAN’S INTELLECTUAL CAPITAL



In establishing intra-government cooperation, the Government of Jordan as part of its efforts to enhance FDI and increase ICT access and use by Jordanian citizens, has provided several incentives to the private sector by means of: tax exemption provisions and tax breaks for ICT companies establishing a commercial presence in Development Zones across the kingdom. Another is the establishment of a one stop shop for those seeking to invest in the country by allowing for a 100% ownership of FDI in line with Jordan’s liberalization policy and its commitments to the WTO.

As for the investment promotion strategies The Jordan Investment Board (JIB) www.jordaninvestment.com has been restructured to focus on promotional activities. The JIB has developed an aggressive promotions strategy and plan that addresses all sectors in the economy with specific focus on ICT as the Kingdom's engine of growth.

VII. ICT APPLICATIONS

ICT thematic applications support sustainable development, in the fields of public administration, business, education and training, health, and employment. Thus the government of Jordan is intensifying its e-government initiatives according to an agreed e-Government strategy, and is setting priorities carefully to ensure greatest take-up of ICT applications. It is also encouraging Jordanian businesses to offer online services and applications (including via mobile phones), especially e-commerce services, in order to grow their businesses.

A. E-GOVERNMENT

E-Government in Jordan is dedicated to delivering services to people across society, irrespective of location, economic status, education or ICT ability. With its commitment to a customer-centric approach, the e-Government will transform government and contribute to the Kingdom's economic and social development. The E-government mission is to manage change in the government and focus on the satisfaction of the recipients of government service, and through various channels to deliver the service using modern technology, knowledge management, recruitment of experienced and qualified staff to implement e-government program and initiatives to be easy and acceptable to citizens in Jordan. The E-Government Program Objectives are:

- Improve service delivery
- Raise the productivity and efficiency of public sector
- Provide better services to individuals and business
- Increased Return on Investment
- Provide the required information with high accuracy in a timely manner
- Development of skills and achievement
- The provision of infrastructure and-technology needed to provide e-services
- Increase the level of security of information

To translate those objectives into reality, the e-government program implemented a number of important projects. This includes the Jordanian e-Government Portal(www.jordan.gov.jo) which contains round the clock 1800 procedures for 117 government institutions and offices that are available to citizens, business, and government service users. Live e-services (almost 50) are available on the portal from several government institutions and are serving different sectors: citizens, business, and government. Table (12) below summarizes the status of Jordan e-government portal.

TABLE (12) -STATUS OF E-GOVERNMENT PORTAL

URL of e-government portal: www.jordan.gov.jo		
Information	General	Yes
	Laws	Yes
	Directories	Yes
Services	Static Info	Yes
	Downloadable Forms	Yes
	Interactive	Yes, Partial
e-payment		Some e-services accessed through external links
Online account		No
Bilingual		Yes
Citizen Participation	Blogs	No

	Polls	No
Additional Services	RSS	No
	Web Statistics	No
	Search	Yes
Other features	Ask, FAQs, Help, Weather, Government News	

A Mobile Portal and SMS services has also been launched, since 2007. It provides access to 27 e-services and also private sector services like water invoices, airport departure and arrival times. Also a National Contact Center (NCC) was launched in 2008 providing simple and easy access to services through various channels: Phone, e-mail, and SMS services. The NCC provides services for 15 entities on a unified number and a complaints system for the whole government. E-Payment Gateway is also available for all government entities to integrate their e-services and benefit from the services of different payment providers.

Fifteen e-services were launched in the first phase of implementing e-government, and currently 160 more services are being developed for various entities such as Greater Amman Municipality, Civil Status and Passport Department, Sales and Income Tax Department, Department of Border Affairs, and the Ministry of Industry and Trade. Furthermore, an E-gate for civil status and passports office (Extranet) has been developed and the issuance of non-criminal certificates e-service for the Ministry of Justice was launched end of 2010.

According to the 2009 ICT diffusion in household survey results, about one third of Jordanian families wish to get e-government services and about one third of individuals aged 15 and over are aware of what is offered by the e-government. The following table shows the percentage of families wishing to obtain e-government services depending on the type of service delivered²⁷.

TABLE (13) – PERCENTAGE* OF FAMILIES WISHING TO OBTAIN E-GOVERNMENT SERVICES DEPENDING ON THE METHOD OF RECEIVING SERVICE, PLACE OF RESIDENCE, AND PROVINCE, 2009

Method of receiving service	Place of residence		Province			Kingdom
	Urban	Rural	Middle	North	South	
Short messages or exploring Internet using Cellular	23.7	20.9	24.7	16	34.8	23.3
Internet	21.9.9	15.8	23.6	12.9	26.1	20.9
Information centers available in public places	9.3	11.5	9.5	7.6	16.9	9.7
Mobile phone or fixed/connecting to service	9.9	7.9	11	3.2	18.8	9.6
Through one information window at government	6.0	12.0	5.7	6.7	16.7	7.0
Mobile phone or fixed IVR	7.4	7.3	7.6	3.5	17.3	7.4
Post	8.7	11.5	8.44	5.3	25.7	9.2
Jordanian knowledge stations	4.4	5.6	4.9	1.9	10.7	4.6
Fax	3.1	3.4	3.0	1.4	9.2	3.1
Total no. of families in the sample	2529	504	1928	829	276	3033

*Sums of percentages in each column are not equal to 100 percent due to families getting more than one service.

²⁷ Source: Diffusion and Usage of ICT in Household Survey, 2009. Ministry of Information and Communications Technology and Department of Statistics: http://www.dos.gov.jo/sdb_pop/sdb_pop_a/tech_2009.pdf

B. E-BUSINESS

The Ministry of Information and Communications Technology (MoICT) prepared a National E-Commerce Strategy for the Hashemite Kingdom of Jordan for the period from 2008 to 2012. The purpose of the National E-Commerce Strategy is to mobilize the nation to develop technical and commercial capacity in e-commerce and to adopt e-commerce in trading of goods and services between businesses and with consumers. The reasons for the adoption of e-commerce are to realize e-commerce related benefits and to ensure that Jordan participates in a step change in trading which is transforming the commercial world²⁸.

As part of the Government of Jordan efforts to implement proposed actions resulting from the e-commerce strategy to support e-business in Jordan, an e-procurement pilot project shall be implemented as a proof of concept for various government departments involved in procuring goods and services. The Ministry of Finance is executing this project in partnership with the United Nations Development Programme (UNDP). Furthermore, a number of legislations were newly introduced or revised by the government to support e-business as mentioned earlier and government agreed in 2010 to exempt revenues generated by e-commerce services from income tax.

The private sector itself plays an essential role in developing and promoting e-commerce and e-business in Jordan. Currently, the majority of banks in Jordan offer e-banking services and different companies, mainly those involved in the tourism sector, promote themselves and sell their services online. Nevertheless, the 2008 ICT diffusion at enterprises survey results showed a modest use of ecommerce at private sector entities noting that 48.48% of those entities have internet access of which 58.37% have websites. Table (14) below summarizes those results²⁹. The major reason behind this is that the need to utilize e-commerce and e-business applications to conduct business efficiently has not been sensed yet by businesses. Nevertheless, it is believed that 2010 survey results will reflect a change in behavior due to various awareness campaigns run by the ICT industry and chambers of commerce.

TABLE (14) - USE OF E-COMMERCE AT PRIVATE SECTOR ENTITIES

Property	Value
% of businesses that have e-commerce activities*	10.03%
% of businesses that use the internet to other private networks to request purchase orders/services**	84.69%
% of businesses that use e-payment methods to collect sales' values**	26.2%
% of businesses that use the internet for receiving sales' orders from customers**	68.95%
% of businesses that use e-payment methods to pay for their purchases**	31.92%

* Computed from the total of businesses that have internet access

** Computed from the total of businesses that have e-commerce activities

Table (15) below summarizes the status of E-business and e-commerce legislations in Jordan

TABLE (15) - THE STATUS OF E-BUSINESS AND E-COMMERCE LEGISLATIONS IN JORDAN

Availability of e-banking services (yes/no)	Yes	Law number: no.85 for the year 2001	The prime law is temporary electronic transactions law
--	-----	-------------------------------------	--

²⁸ Source: National E-commerce Strategy <http://www.moict.gov.jo/Proposed%20Ecommerce%20Strategy%20Final.pdf>

²⁹ Source: Diffusion and Usage of ICT at Enterprises Survey, 2008. Ministry of Information and Communications Technology and Department of Statistics.

Availability of e-commerce law (yes/no)	No Separate legislation	Law number:	Covered by the e-transaction Law
Availability of e-transactions law (yes/no)	Yes	Law number: 85 for the year 2001	Currently being revised
Name other laws on e-services	Information Systems Crime Law	Law number: 30 for the year 2010	

C. E-LEARNING

Jordan IT companies are pioneers in the Arab region in terms of developing and implementing e-learning applications and EduWave is an important example. The King Abdulla Fund for Development (KAFD) has financed an e-learning project which is currently applied by the Ministry of Education (MoE) in all schools across the Kingdom (elearning.jo). The EduWave system which was built by a Jordanian IT company offers structural organization management services to the MoE and its various departments and sections. It also helps the ministry manage educational programs and curricula for all stages and assists in conducting exams. The EduWave Portal offers e-solutions to teach students at all stages and enables them to use an interactive graphic interface. It also provides continuous student- student, and student-teacher communication. The system also enables teachers to employ lively examples, models, and scientific experiments, compared to examples that are only still sketches or drawings used in conventional textbooks³⁰. Table (16) below includes major e-readiness indicators for year 2008 at government primary and secondary schools.

TABLE (16) - MAJOR E-READINESS INDICATORS IN 2008 AT GOVERNMENT PRIMARY AND SECONDARY SCHOOLS³¹

Indicator	Value
Ratio of learners-to-computer	16:1
Ratio of learners-to-computer connected to Internet	25:1
Average number of computers per educational institution	20
Proportion of learners who have access to the Internet at school	86%
Proportion of ICT-qualified teachers	45%
Proportion of teachers trained to teach subject(s) using ICT facilities	60%
Proportion of schools with Internet-assisted instruction (2009)	72%

Many Jordanian universities are considering ICT as an integral part of their daily practices and management. They have students' information systems, provide online access to e-libraries, and acknowledge the potential of e-learning to impact learning outcomes and offer e-courses. Examples include Jordan University, Philadelphia University, Jordan University of Science and Technology, and Yarmouk University. The Ministry of Higher Education and Scientific Research, and as part of the higher education reform in Jordan, is considering developing specific and general accreditation criteria to "blend" regular and e-learning.

D. E-HEALTH

Hakeem is the first national e-Health initiative in Jordan which was launched by His Majesty King

³⁰ Source: kafd.jo

³¹ Source: Ministry of Education

Abdullah II on the 27th of October, 2009. The program aims to facilitate efficient and improved healthcare to patients, by providing real time and up to date electronic medical information throughout the public health system. Hakeem will allow clinicians to view their patients e-health records (EHR) using their national ID number, which will include comprehensive procedural and surgical reports, current medications, allergies, medical and surgical history, as well as hospitalization and clinic visit notes. In addition, it will provide online access to lab results and digital radiological exams. The system will alert the ordering provider of critical lab results, drug interactions and it will remind providers when their patient is due for certain exams or tests. At later stages of the project, a bar code medication control and management system will be deployed. This function will dramatically increase patient safety by ensuring accurate admission of medications, and will contribute to the reduction of medication waste and prescription duplication³². The proof of configuration phase was accomplished successfully in Prince Hamzah Hospital and similar pilot projects are being implemented at Amman Comprehensive Clinic and King Hussein Cancer Centre.

On the other hand, the Ministry of Information and Communications Technology (MoICT) is currently working on setting up a Public-Private Partnership complementary Health Care initiative. The vision is to transform Jordan's healthcare delivery system to become a regional center of excellence for a healthy population and to boost sustainable economic growth. This is supposed to be a multi-year, global public-private partnership in which available Cisco and partner solutions are leveraged for ICT-enabled collaborative care and to drive innovation. The initiative also aims at developing the Healthcare workforce for the new economy and enhancing medical tourism delivery for economic growth and job creation³³. The initiative shall be implemented in a phase manner. This includes:

- Establishing a Project Management Office (PMO) to manage the initiative and getting various stakeholders buy-in to support it.
- Implementing Pilots: Healthy Lifestyle, Tele-health, Mobile Clinic, and health Academy.
- Signing-up with partners and creating an ecosystem.
- Designing and implementing a National E-health Records (EHR) Data Center.
- Implementing 1-2 connected hospitals.

E. E-EMPLOYMENT

Al-Manar is a project initiated by at the National Center for Human Resources Development (NCHRD) to improve the collection, analysis, and distribution of human resources information in Jordan taking into consideration the labor market needs for comprehensive, timely and regularly updated gender sensitive information systems that are supported by continuous technical and internet-based services. As part of Al-Manar project, a bilingual web-based employment system was developed (<http://www.almanar.jo/ele/web/>) to increase the accessibility of job seekers to available jobs, broaden the choice for employers and job seekers, and decrease the amount of time devoted by those seeking employment. The system is now fully functional and widely used locally and regionally. There are currently about 100,000 jobseekers and 10,000 employers registered to the system.

In addition, the Al-Manar project has been building databases and structuring human resources information (HRI). The first part of this endeavor includes the creation of an educational database, comprised of information about students enrolled in higher education and vocational training programs; this is an initial stage that will be expanded to include students of all educational levels. The second part of the database project consists of the creation of a Jordanian labor force database, which is comprehensive and inclusive of the domestic labor force divided in to the employed and unemployed³⁴.

³² Source: www.ehs.com.jo

³³ Source: Ministry of Information and Communications Technology

³⁴ Source: www.almanar.jo

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

Although cultural and linguistic diversity is essential to the development of the Information Society, cultural identity, traditions and religions should always be respected. Digital content on the Internet plays a vital role in preserving and facilitating the evolution of the language and promoting cultural diversity while sustaining socio-economic development. In addition, digital content development can play a major role in preserving the national heritage.

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

There are different examples in Jordan where ICT has been used for the preservation of linguistic diversity and cultural heritage. This includes the availability and development of systems for ensuring continued access to archived digital information and multimedia content in digital repositories and support archives and the digitization of public, educational, scientific and cultural heritage information.

The National Jordanian Committee for Arab Heritage Initiative which was formed in 2007 under the auspices of the Ministry of Culture in Jordan is an important example. It is working toward filing, indexing, documenting and publishing a wide range of online Arabic content and thought across different time series in all fields of interest: the scientific, the cultural, historic heritage, and literature. Its aim is to provide researchers in the Arab community with a comprehensive online information database on a wide range of subjects in the Arabic language to enhance the collaborative sharing of knowledge of Arabic content and protect Intellectual Copyright works as well as stimulate research among researchers via an online database: <http://www.dhakhira.jo>.

Visitjordan.com is another example. It is an online portal utilized by The Jordan Tourism Board (JTB), which is an independent, public – private sector partnership committee, to brand, position and promote the Jordan tourism product as the destination of choice in the international markets and to reflect the true image of the Jordan tourism product, being a cultural, natural, religious, adventurous, leisure and MICE destination.

B. LOCAL AND NATIONAL DIGITAL CONTENT DEVELOPMENT

Individuals, through the use of social networking and social media, and local companies, through the development of cultural and recreational portals, contribute tremendously to the development of local and national digital content. Examples include Shoofee TV, an online aggregator and Jeeran.com, an online community with 1.7 million registered members, 4.8 million total monthly uniquevisitors, and (13.8) million monthly page views³⁵ which has expansion plans to include launching a French-language version of the Maghreb and purchasing Jordan's start-up Talasim.com, the region's first comedy community.

Examples also include Maktoub.com which is now the most popular Arabic-language online portal with 16.5 million users. Yahoo's purchase of the portal was based on forecasts that spending on online advertisements in the MENA region would increase by up to 40% in 2010. Rubicon Group Holding, which was founded in 2004, is another success story. It is a leading emerging markets' production company specialized in digital content production for entertainment and education across various platforms including television, theatrical, web as well as physical themed locations theatrical. It has its head office in Amman, Jordan with subsidiaries in Dubai, Los Angeles and Manila. Rubicon manages the international licensing and merchandising of its intellectual properties, such as Tareq wa shireen, the first 2D animated series created exclusively in Arabic; Ben & Izzy, a 3D animated action adventure Pink Panther and Pals which is co-

³⁵ Source: <http://www.jeeran.com/advertise/?lang=e>

produced with MGM Studios airing on Cartoon Network³⁶.

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

R&D in ICT and Arabic language processing is considered a national priority. A concrete evidence of this is identifying the research issues mentioned in the table below “a top priority” by the Scientific Research Support Fund SRSF. SRSF was established in 2007 as a financially and administratively independent government entity. It is responsible for encouraging and supporting scientific research in Jordan and it is administered by a Board of Directors headed by the Minister of Higher Education and Scientific Research. SRSF has provided a total of JD 13 million in financial support to several scientific research projects during 2008 and 2009. Examples of selected research projects include sensitive resource management in wireless mobile networks and developing a solid recycling system to recover valuable materials from (e-waste) using vibration.

TABLE (17) - ICT TOP PRIORITY RESEARCH ISSUES³⁷

Subject	Research Issue of Top Priority
Information Security and protection and protection and Computer Crimes	• Building & management of e-information Emergency Response Teams (CERT).
	• Security of data transfer over national networks.
	• Development of security algorithms for electronic smart cards.
Design and Efficiency of Computer Networks	• Security of wired and wireless computer networks.
	• Infrastructures, protocols and applications of the new generation of computer networks.
	• Computer network management and the management of the national computer network.
Software Engineering	• Building of criteria and foundations for software development.
	• Programming languages evaluation criteria.
	• Software quality assurance.
preparation of the infra - Structures for Internet Applications	• Internet application development by using the available safe and software.
	• Multimedia transfer (audio and video) over internet protocol.
	• Development of the geographical information system infrastructure.
Arabic Language Computing and Processing	• Arabic search engines.
	• searching in the content of Arabic databases.
	• Arabic language corpus.
Information Technology in Health, Energy, Environment and Agriculture	• Software and hardware solution for solar system best utilization.
	• Using software solution in health care.
	• Software solution for issues related to control system.
<i>Electronic Content and Education and Knowledge-Based Society</i>	• <i>Design & implementation of interactive software and e- learning.</i>
	• <i>Determining of new criteria for the e-content and suggesting new Arabic learning standards.</i>
<i>Arabic Electronic Content</i>	• <i>Arabic e-content management and standards.</i>

³⁶ Source: <http://www.arabianbusiness.com/jordan-s-rubicon-co-produce-pink-panther-201200.html>

³⁷ Source: <http://www.srf.gov.jo/>

Subject	Research Issue of Top Priority
	<ul style="list-style-type: none"> • <i>Specialized Arabic content development.</i> • <i>Developing specialized social websites.</i>
Technology Awareness and the Inspiration of its Acceptance.	<ul style="list-style-type: none"> • Enrichment technology spread in Jordan. • Supporting computer utilization in the higher education sector. • Technology utilization for people with special needs.
Management Information Systems and Knowledge Management	<ul style="list-style-type: none"> • Applications of management support systems in the Jordanian work environment. • Development of the applications of the e-university. • Development of the applications of the e-government.

D. ARABIC DOMAIN NAMES

Jordan submitted an application on Dec 12, 2009 to the ICANN for permission to develop IDN ccTLD top level domain name in Arabic. This was approved on April 19, 2010 and ICANN and IANA have successfully implemented and tested the system on NITC servers. The service is now up and running for those utilizing the DNS servers. Many challenges were faced due to Arabic script which, unlike the English language, consists of many variables, prefixes and suffixes. Below, Jordan's up and running IDN ccTLD utilizing DNS servers are:

- <http://موقع.مركز-تكنولوجيا-المعلومات-الوطني.الأردن/>
- <http://موقع.متمو.الأردن/>
- <http://موقع.وزارة-الاتصالات-وتكنولوجيا-المعلومات.الأردن/>
- <http://موقع.وزارة-الاتصالات.الأردن/>

The NITC registers Arabic domain names under the TLD الاردن for all entities interested. It opened registration for all as of December 19, 2010. Any entity, whether Jordanian or International, can acquire an Arabic domain name under الاردن. However, every entity must abide to the registration policy found at http://idn.jo/registration_policy.aspx (in Arabic). As of December 21, 2010, the NITC has registered 61 domain names (28 for the public sector and 33 for the private sector).

IX. MEDIA

The media sector and its various and diverse forms are part of the digital world that encompasses all sectors of the economy. The development of information society had a great impact on the growth of media systems globally as well as nationally. These media systems are recognized as an important contributor to press freedom and plurality of information.

A. MEDIA DIVERSITY, INDEPENDENCE AND PLURALISM

There is relatively large number of print publications and radio and TV licenses in Jordan, and the diversity of content is gradually increasing although the government directly owns the Jordan Radio and TV Corporation (JRTV), and the national news agency, Petra. This is due to rapid evolution of unlicensed online new agencies. The table below summarizes the status of Media outlets in Jordan.

TABLE (18) - STATUS OF MEDIA OUTLETS IN JORDAN

Media outlets	Number	Language(s)	Ownership
---------------	--------	-------------	-----------

			Private	Mixed	Government	Foreign
News papers (dailies)	8	Arabic 7 English one	4	4	None	none
Electronic newspapers****	70	Arabic	All			
Magazines (weeklies, monthlies and periodicals)	286	Arabic, English	All	None	None	None*
News agencies*****	11	Arabic/ English/French			1	10
Radios***	24 (FM licenses)	Arabic 20 English 4	18		Six**	None*
Televisions***	17 (satellite) 1 terrestrial	Arabic	All			None*

* Though there is foreign (mainly regional) investment, the licensees are all companies registered in Jordan, hence considered Jordanian for all legal purposes.

** "Government" FM stations include also stations run by official bodies and/or state institutions, such as the Public Security Directorate (PSD).

*** Source: Audio-Visual Commission website (avc.gov.jo). These figures do not necessarily include all Amman bureaus of foreign and pan-Arab news networks.

**** The figure does NOT include online editions of newspapers, the approximation refers to "news websites". No official figures available as no registration or licensing procedure/mechanism is currently in place in Jordan for news websites.

***** This figure includes only the news agencies that have a registered bureau in Amman. Should news agencies with individual correspondents/stringers also be counted, the total could be more than twice as much.

Journalists enjoy financial support and other benefits through the Jordan Press Association (JPA). Membership in the JPA is mandatory for the exercise of the profession according to the Jordan Press Association Law no. 15 for the year 1998. Although the JPA doesn't provide a breakdown of its members by gender, a study published in March 2010 on arabstoday.net placed the percentage of female JPA members at slightly less than 20 per cent, meaning around 160 of the 840 JPA members.

Jordan is the first and only Arab country to have an Access to Information law, which was promulgated in 2007. Freedom of expression is guaranteed by the Constitution (Art 15) and jail sentences for journalists were abolished with the 2009 amendments to the Press and Publications Law. In 2010, Jordan made progress towards the de-criminalization of libel and defamation by amending some related Penal Code articles. Broadcasting sector was opened in 2002, and since then the country has witnessed a rapid increase of private radio stations and more recently satellite TV stations, too.

B. THE MEDIA AND ITS ROLE IN THE INFORMATION SOCIETY

E-newspapers and online news agencies are playing an important role in delivering relevant news and information to Jordanians. Internet penetration doubled in Jordan between 2005 and 2009, from 13.2 to 29 percent³⁸, and it reached 33 percent of the population in the third quarter of 2010. The rise in internet usage was accompanied by the establishment of an exceptionally large number of news website, many of which are run by a single person or two and simply re-publish content lifted from other sources.

Community radio is a very new phenomenon in Jordan, but very promising, especially in rural areas. Over the past three years the number of community/local stations has grown from one to five and in southern governorates especially local radios have gained large shares of listenership.

C. CONVERGENCE BETWEEN ICT AND THE MEDIA

³⁸ Source: TRC website: http://www.trc.gov.jo/index.php?option=com_content&task=view&id=2018&lang=english

The Government of Jordan is taking into consideration the growing convergence of telecommunications with Audio-Visual media and Information Technology, and its implication on content regulation. Therefore, the Government of Jordan, and through the MoICT, initiated a project to review the telecommunication law taking into consideration major sector issues such as convergence and effective competition in light of global developments and changes, with the aim of proposing a unified communications law that takes into account the Government's intention to create a single Communications Regulator, which would subsume the functions of the Telecommunication Regulatory Commission (TRC) and the Audio Visual Commission (AVC).

X. INTERNATIONAL AND REGIONAL COOPERATION

Cooperation among all stakeholders at both international and regional levels, in developing strategies and action plans and financing and implementing resulting ICT programs is essential for the development and successful implementation of the information society.

A. FINANCING OF ICT NETWORKS AND SERVICES

The attraction of major private national and foreign investments is only possible through the provision of a transparent, stable and predictable investment environment. Thus the Government of Jordan provided several incentives to national and foreign investors by means of tax exemption provisions and tax breaks for ICT companies establishing a commercial presence in Development Zones across the kingdom. It also established a one stop shop for those seeking to invest in the country and allowed a 100% ownership of FDI in line with Jordan's liberalization policy and its commitments to the WTO. Furthermore, ICT exporting companies such as BPOs have also been exempted from income taxes to increase bilateral and multi-lateral export trade in ICT.

In addition, different innovative financing mechanisms were adopted to encourage building ICT networks and delivering ICT services. Examples include strategic agreements and MoUs the Government of Jordan signed with several multinational corporations such as Microsoft, Cisco, Oracle, INGRES, and Google, to develop ICT projects and enhance ICT use and local expertise and competencies in both the public and private sectors. Examples are given in the Public/Private Partnership (PPP) and Multi-Sector Partnership (MSP) section.

B. INFRASTRUCTURE DEVELOPMENT PROJECTS

The Regional Cable Network (RCN) is a vital example of an ICT infrastructure project resulting from multinational private sector collaboration. RCN aims at establishing a multi-terabit cable system that connects Al-Fujairah in the United Arab Emirates through to Saudi Arabia, Jordan, Syria, and Turkey into Europe to provide reliable and resilient communication networks and internet connectivity to founding members and neighboring countries. It will provide a reliable and diverse route that connects East and West via a terrestrial cable that caters for existing demand and future broadband growth and growing internet applications.

On the other hand, the government of Jordan is currently investigating how to involve local and international players through a suitable PPP model to complete building and operating the National Broadband Network (NBN), which is a public sector-led initiative, initiated and managed by the Ministry of Information and Communications Technology (MoICT). NBN connects healthcare institutions, schools, government entities and Universities with a fiber-optic network aiming to improve both the educational system and healthcare systems as well as increase access to under-served areas. Future plans are also being studied to utilize the network to support the business sector in Jordan.

The Ministry of Information and Communications Technology (MoICT) through the financial support

of the Spanish Government and in cooperation with the King Hussein Bin Talal Development Area/ Irbid Development Cooperation (IDA) has completed a feasibility study in 2010 to assess the viability of establishing a Technology Park (TPJ) in the North of Jordan. The study has so far developed the IT Park blueprint in terms of infrastructure design and landscaping, operational modalities and running costs. Efforts to proceed with construction of the Technology Park are underway and so far two building have been erected to house IT companies, some of which support Business Process Outsourcing (BPOs).

As part of strengthening bilateral relations with the European Union (EU) through the European Neighborhood Partnership Agreement (ENP) and Jordan’s “advance status” relations, a contract framework will be signed with the EU to provide short-term technical assistance to review the National Policy Statement in the ICT and Postal Sectors of 2007 and propose a National ICT Strategy 2012-2015. The projects will review the National Policy Statement within the context of international developments and local requirements as well as update the national strategy in a bid to propose improved work and implementation modalities in accordance with national requirements, capabilities and conditions and consequently meet identified goals and strategic objectives in line with the WSIS action lines and the Geneva and Tunis action plans.

C. WSIS FOLLOW-UP

The Government of Jordan recognizes and works toward the achievement of its commitments set forth in international agreements to which Jordan is a signatory, including the general undertakings made as part of the World Summit on the Information Society (WSIS) Geneva and Tunis goals and plans and the U.N. Millennium Development Goals. Table (19) includes the status of Jordan's commitment to different international agreements:

TABLE (19) -STATUS OF JORDAN'S COMMITMENT TO DIFFERENT INTERNATIONAL AGREEMENTS

WTO	Paris Convention	PST	WCT	Madrid Agreement	Hague Agreement	PLT	TRIPS
✓	1972	X	2004	X	X	X	2000

Jordan has a national ICT strategy and relevant action plans to support the fulfillment of the goals indicated in WSIS declaration of principles (Geneva 2003) and the Regional Plan of Action (RPoA) for building the information society. And all previously mentioned initiatives and projects in preceding chapters are evidences of Jordan's commitment to the fulfillment of the goals indicated in WSIS declaration of principles and the eleven action lines:

- 1: The role of public governance authorities and all stakeholders in the promotion of ICTs for development
- 2: Information and communication infrastructure
- 3: Access to information and knowledge
- 4: Capacity building
- 5: Building confidence and security in the use of ICTs
- 6: Enabling environment
- 7: ICT Applications: e-government, e-business, e-learning, e-health, e-employment, e-environment, e-agriculture, e-science
- 8: Cultural diversity and identity, linguistic diversity and local content
- 9: Media
- 10: Ethical dimensions of the Information Society
- 11: International and regional cooperation

On the 23rd of December 2010, a Host Country Agreement was signed between ESCWA and Jordan to establish the ESCWA Technology Centre in the Jordanian Capital Amman. The objectives of the Centre are to assist the member countries by strengthening their capabilities to develop and manage national systems; develop, transfer, adapt and apply technology; determine the suitable technology for the region and facilitate its development and improve the legal and commercial framework for the transfer of technology. The Centre also aims at enhancing the technological and scientific knowledge content of major economic sectors in member countries³⁹.

The ESCWA Technology Centre in Jordan is an essential regional project for building the information society and for exchanging knowledge, experiences and best practices on policies and tools designed to promote the Information Society at a regional level.

To assess its contribution to the building of the information society and the achievement of internationally agreed WSIS goals, the government of Jordan continuously evaluates and regularly assesses the magnitude of the digital divide, in both its domestic and international dimensions, and tracks its national versus regional and global progress in the use of ICTs. This is evident by the regular ICT diffusion and usage surveys and ICT impact studies conducted in Jordan and the regular analysis of Jordan's ranking in the Global Information Technology Report⁴⁰. These surveys and studies provide statistical information on the Information Society, with basic ICT performance measurement indicators (internationally comparable) and the analysis of its key dimensions. The major indicators are published on MoICT website (www.moict.gov.jo) and can be accessed through the ICT indicators database mentioned earlier (<http://www.moict.gov.jo/di6web/>). Major available indicators are included in Annex I.

Surveys and studies include:

- Annual "Diffusion and Usage of ICT" survey in households conducted as a result of an MoU signed between the MoICT and the Department of Statistics (DOS).
- Bi-annual "Diffusion and Usage of ICT" survey in enterprises conducted as a result of an MoU signed between the MoICT and the Department of Statistics (DOS).
- Annual survey conducted with the assistance of INT@J to assess the growth in ICT sector in terms of revenue, exports, and employment in ICT companies operating in accordance with ISIC 4.0 economic activities.
- Annual Assessment impact studied on the economic impact of ICT on the national economy in general and on selected economic sectors, in order to measure the contribution of the sector to the GDP and its impact on productivity, labor productivity, and other economic aspects of those sectors. Studied sectors in 2009 and 2010 include Education, Manufacturing, Health, Financial Services, Whole Sale and Trade, And Tourism sectors.

The TRC also publishes on its website (www.trc.gov.jo) major Telecommunications indicators, market studies, and survey results such as the 2010 Telecom recipients' satisfaction questionnaire results.

XI. BUILDING THE ICT SECTOR

The ICT sector in Jordan was developed as a result of the collaborative efforts of both the public and the private sectors and the assistance of NGOs. The REACH initiative which was presented to HM King Abdullah II in October 1999 by IT industry leaders, laid out the first clear plan of action to boost the Jordan nascent IT sector and maximize its ability to compete in local, regional, and global markets. It took a critical

³⁹ Source: <http://www.escwa.un.org/divisions/ictd/etc/about.asp>

⁴⁰ The annual analysis report of Jordan's ranking in the GITR report is prepared and published on MoICT website: http://moict.gov.jo/ar_MoICT_tkrer.aspx

look at Jordan's strengths and weaknesses vis-à-vis other relevant competitors. It specified actions to be implemented by the private sector, the Government, and by other stakeholders to ensure a favorable place for Jordan in the knowledge-based economy of the future. REACH formed the strategic framework for public-private cooperation in building and developing the ICT sector in Jordan. REACH was revised continuously to ensure having an updated National ICT strategy; this resulted in REACH 2.0, REACH 3.0, REACH 4.0, and finally the National ICT Strategy discussed earlier.

The ICT sector in Jordan witnessed a notable progress on several levels in the last eleven years, i.e. since 1999. This included having sound and continuously revised policies and strategies for developing the sector, a reliable ICT infrastructure, appropriate ICT capacity building programs, enabling legal, regulatory, and investment environments, and good deployment of ICT applications. This progress was accompanied by a clear contribution of the ICT sector to the Jordanian national economy as elaborated in section C below.

A. ICT FIRMS

Jordan follows the fourth edition of the International Standard Industrial Classification of All Economic Activities (ISIC 4.0) in classifying ICT and IT enabled services (ITES) activities and accordingly firms. Table (20) includes the identified activities performed by ICT and ITES companies in Jordan. According to the 2009 ICT and ITES Statistics and Yearbook, there were 442 operational ICT and ITES companies by the end of 2009.

TABLE (20) - ACTIVITIES PERFORMED BY ICT AND ITES COMPANIES IN JORDAN ACCORDING TO ISIC 4.0⁴¹

ISIC Code	ISIC Activity
2610	Manufacture of electronic components and boards
2620	Manufacture of computers and peripheral equipment
4651	Wholesale of computers, peripheral and software
5820	Software publishing
6110	Wired telecommunications activities
6120	Wireless telecommunications activities
6130	Satellite telecommunications activities
6190	Other telecommunications activities
6201	Computer programming activities
6202	Computer consultancy and computer facilities management
6209	Other information technology and computer service activities
6311	Data processing, hosting and related activities
6312	Web portals
9511	Repair of computers and peripheral equipment
263001	Manufacture of data communications equipment
332001	Installation of communications equipment
332002	Installation of mainframe and similar computers
465201	Wholesale of telephone and communications equipment
951202	Repair of communications transmission equipment
8220	Activities of call centers
Training*	Training

⁴¹Source: The 2009 ICT and ITES Statistics and Yearbook:
http://intaj.net/sites/default/files/2009_ICT__ITES_Industry_Statistics__Yearbook_Final.pdf

*According to ISIC 4.0 classification, Training is not considered an ICT activity

B. GOVERNMENT FACILITATION

Government of Jordan assistance to Jordanian enterprises in adopting and implementing ICT related solution, increasing their competitiveness by streamlining administrative procedures, facilitating their access to capital and enhancing their capacity to participate in ICT-related projects is evident by many examples such as enabling the implementation of the first wave of e-services and the national e-government portal by a consortium of local ICT firms and requesting International ICT firms, which the government have strategic agreements with to work closely with national ICT firms and help in building their ICT capacities.

Also Jordan Enterprise Development Corporation (JEDCO) assistance to SMEs whether in terms of providing the necessary and available technical and financial assistance to enable them to compete and to reinforce their skills and administrative, technical and exporting capabilities and in providing advice to enterprises in preparing, formulating their strategies and assessing their needs is also another example of how the government facilitates and supports the development of entrepreneurship and innovation.

C. CONTRIBUTION OF ICT SECTOR IN THE NATIONAL ECONOMY

ICT contribution to the GDP reached to 14.1% in total of Jordan's economy in 2008; this figure comprises of 9.5% as a direct contribution by the ICT sector and 4.62% as indirect contribution to GDP by enabling the other economic sectors. Additionally, and based on a time serious of indicators (between 1999 and 2008) i the ICT contributed an average of 13.9% to the country's overall productivity and 22.1% to Jordan's labor productivity and created more than 80,000 new jobs divided between direct employment in the ICT sector itself, indirect employment in other sectors as new jobs resulted from the introduction of ICT in these sectors and induced employment in other sectors resulting from economic activities of ICT sectors employees⁴².

Table (21) includes the latest available statistics about the ICT and ITES sector in terms of revenue and employment whereas table (22) shows the growth in the IT sector in specific between the years 2003 and 2009⁴³.

TABLE (21) - ICT & ITES SECTOR STATISTICS 2009

	Domestic	Export	Total
Total Revenue	\$1,974,907,344	\$223,803,127	\$2,198,710,470
Telecom Revenue	\$1,288,298,369	\$11,618,624	\$1,299,916,994
IT Revenue	\$685,461,382	\$209,526,864	\$894,988,247
ITES Revenue	\$614,407	\$2,657,638	\$3,272,045
IT Training Revenue	\$533,185	\$0	\$533,185
Total ICT and ITES Sector Employment			14,928
IT Employment			11,000
ITES Employment			334
*Major Telecom Operators Employment			3,594
Total Investment in IT			\$38,728,942

⁴²Source:Economic Impact of ICT in Jordan study 2009, Ministry of Information and Communications Technology.

⁴³Source: The 2009 ICT and ITES Statistics and Yearbook

Amount of local Investment in IT			\$22,497,616
Amount of foreign Investment in IT			\$16,231,326

*Major telecom operators are Zain, Orange, and Umniah

TABLE (22) -GROWTH IN THE IT SECTOR (2003 – 2009)

	2003	2004	2005	2006	2007	2008	2009
IT Export Revenue	\$69,728,000	\$79,410,743	\$162,619,518	\$191,520,379	\$196,907,691	\$226,863,277	\$209,526,864
Growth %	74.16%	13.89%	105%	17.80%	2.81%	15.21%	-7.64%
% of Total Revenues	24%	18%	28%	25.00%	22.30%	23.57%	23.41%
IT Domestic Revenue	\$226,183,000	\$361,103,905	\$418,254,125	\$578,554,212	\$686,063,063	\$735,571,817	\$685,461,382
Growth %	20.02%	59.65%	15.80%	38.33%	18.58%	7.22%	-6.81%
% of Total Revenues	76%	82%	72%	75.00%	77.70%	76.43%	76.59%
IT Total Revenue	\$295,910,000	\$440,514,648	\$580,873,643	\$770,074,591	\$882,970,754	\$962,435,094	\$894,988,247
Growth %	29.51%	48.87%	31.86%	32.57%	14.66%	9.00%	-7.01%
IT Foreign Direct Invest. (FDI) Yearly	\$11,594,500	\$2,900,000	\$10,524,761	\$13,569,656	\$3,070,791	\$1,690,141	\$16,231,326
IT FDI Cumuli.	\$79,600,000	\$82,500,000	\$93,024,761	\$106,594,417	\$109,665,208	\$111,355,349	\$127,586,675
IT & ITES Emp.	8,117	8,523	10,032	10,712	11,034	10,294	11,334

According to the Telecommunication Regulatory Commission (TRC) published sector indicators, total investment in the Telecommunicates sector in 2009 reached 247.18 Million US Dollars. Table (23) shows the accumulation in investment in the Telecommunications Sector between 2005 and 2009 respect to service.

TABLE (23) - CUMULATIVE INVESTMENT IN THE TELECOMMUNICATIONS SECTOR BETWEEN 2005-2009 IN (MILLIONS US DOLLARS)⁴⁴

Service	2005	2006	2007	2008	2009
Fixed phone	17.32	17.89	17.18	32.39	33.80
Mobile phone	192.96	195.77	130.28	91.55	169.01
Internet	7.89	3.24	15.63	30.99	43.66
Other	0.56	2.11	0.70	7.04	0.70
Total	218.73	218.87	163.80	161.97	247.18

⁴⁴ Source: TRC Website: trc.gov.jo

D. R&D AND INVESTMENTS IN THE ICT SECTOR

Jordan is taking a progressive stance and concrete measures in promoting and supporting Research and Development (R&D) efforts in various sectors including the ICT. Jordan National Agenda identified key performance indicators related to overall R&D, and set targets for its development, including the increase of overall R&D spending to 1% of GDP in 2012⁴⁵ while the 2007-2011 National ICT strategy identified R&D as a major pillar. Thus, R&D in ICT is among the top priorities the government of Jordan is considering based on socio-economic needs. Other priority areas are: water, energy, health, biotechnology, and nanotechnology. Table (17) in Chapter (VII) includes ICT highest priority areas identified by the Scientific Research Support Fund in collaboration with the MoICT and INT@J.

R&D is carried out in Jordan at higher education institutions or by public and private research centers. It is mainly funded by different local entities and agencies including Universities; the Scientific Research Support Fund (SRSF), Industries, the Higher Council for Science and Technology (HCST), some research centers, King Abdullah II Development Fund (KADF), and King Abdullah II Design and Development Bureau (KADDB) or through international organizations such as the EU commission.

The following are evidences of Jordan's commitment to R&D in the ICT sector:

- The regular review of the National Science and Technology (S&T) Policy to reflect evolving national and international developments encompassing Science and Technology and R&D priorities and performance indicators.
- Strengthening the relationship among members of S&T community, productive and services sectors and government.
- The Royal Scientific Society (RSS) significant contributions to the development of Science and Technological research by making advancements in nanotechnology, biotechnology, in addition to establishing the iPARK, Jordan's first IT incubator.
- The establishment of ICT incubators in different parts of the kingdom to leverage innovative start-ups and projects with commercial potential. Al-Urdonia Lil Ebda north incubator is a major example; Irbid ICT Business Incubator is the first outside the capital (Amman), it is a business incubator concerns about establishing and motivate software industry in the north region of Jordan. This incubator is dedicated to help graduated students in IT related fields, not just in Irbid city but also to all north region, to start up their own software companies. It consists of (5) incubation units of varying sizes accommodate different number of incubatee, fully equipped space, up-to-date IT infrastructure. (100%) of the incubator's space are used where all incubated companies work in IT fields⁴⁶. Some of Irbid ICT business incubator achievements include⁴⁷:
 - Incubating and granting 15,000 JOD seed capital fund to Brilliance for E-Learning Company" which is specialized in developing and producing e-learning devices and tools.
 - Incubating and granting 15,000 JOD seed capital fund to "Mashal for Designing Electronic Integrated Systems L.L" which develops Remote Access Control and Data Acquisition systems.
 - Incubating and granting 15,000 JOD seed capital fund to "Our Sons for Educational Kits Company" which targets the vocational foundations, universities, and industrial schools by providing new easy computerized devices for vocational training.

⁴⁵ Source: Jordan National Agenda: <http://www.nationalagenda.jo/tabid/53/default.aspx?Location=1>

⁴⁶ Al Urdonia Lil Ebda official website: www.bic.jo

⁴⁷ Source:

http://www.bic.jo/index.php?option=com_content&view=category&layout=blog&id=24&Itemid=38&lang=en

- Running R&D programs with assistance from donors such as the Support to Research and Technological Development and Innovation Initiatives and Strategies in Jordan (SRTD) since the beginning of 2008. SRTD is funded with 4Million Euros from the European Union, and is hosted at the HCST. It aims at increasing Jordan’s scientific and technological capacity by fostering research and innovation linked to the private sector. Some of (SRTD) Jordan achievements include:⁴⁸ Providing Jordanian researchers with seminars and training about Technology Transfer (TT) and Intellectual Property Rights.
- Supporting the establishment of an Intellectual Property Commercialization Office (IPCO) at the El-Hassan Scientific City in 2010.
- Under two Grant schemes the SRTD project, the Higher Council for Science and Technology (HCST) and Jordan Enterprise, have given a unique opportunity to 30 researchers and 30 new businesses to develop their innovative ideas.
- The contribution of \$ 10 Million dollars by HM King Abdullah II to the Science and Technology Youth Fund in the 2008 Conference for Nobel Laureates.
- Jordan’s membership in the EUMEDCONNECT 2, a project that connects over (180) Mediterranean Universities to a network of about 3,500 institutions in Europe to engage in collaborative research work on a range of issues as: health, environment, content and culture.

Table (24) below summarizes the status of Jordan R&D in ICT.

TABLE (24) - STATUS OF JORDAN R&D IN ICT

Existing ICT research facilities	Yes*
Existing ICT industrial clusters	Yes
Existing ICT incubators	Yes

* Example: The National Nanotechnology Center

XII. MILLENNIUM DEVELOPMENT GOALS – MDG

ICT are an important catalyst in achieving the MDGs, not only in furthering communication and exchange of information, but also in support of specific development initiatives. Thus the Government of Jordan and relevant organizations are increasingly deploying and mainstreaming ICT into the development process.

A. PROGRESS TOWARD ACHIEVING THE MDG

Jordan has adopted social, economic, educational and environmental policies and strategies that are inclusive, committed and harmonious with the MDGs during the past ten years. These policies and strategies have been translated into executive programs to achieve specific development goals to fight poverty, provide learning opportunities to all, eliminate all forms of discrimination against women, improve child and maternal health, achieve sustainable environmental development and forge active partnerships for development.

This is noticeable in the Social and Economic Development Plan (2004–2006)⁴⁹, the Executive

⁴⁸ Source: srt-d-eujo.org

⁴⁹ Source:

http://www.mop.gov.jo/pages.php?menu_id=208&local_type=0&local_id=0&local_details=0&local_details1=0

Program (2007–2009)⁵⁰, and the Executive Development Program (2011–2013)⁵¹, all of which take into consideration a set of policies, measures, actions, programs, projects and activities that have worked towards achieving the MDGs, improving the citizens’ quality of life, and raising their standard of living.

In general, the overall progress is satisfactory; yet the pace of progress varies from one goal to another and from one target to another within the same goal. Table (25) summarizes the progress achieved with respect to goals⁵².

TABLE (25) PROGRESS IN ACHIEVING THE MDGS IN JORDAN

Goal	Progress Achieved
Eradicate Extreme Poverty and Hunger	Achievable if certain measures are taken
Achieve Universal Basic Education	Achievable
Promote Gender Equality and Empower Women	Achievable if certain measures are taken
Reduce Child Mortality	Achievable if certain measures are taken
Improve Material Health	On Track
Combat Human Immunodeficiency Virus/ Acquired Immunodeficiency syndrome (HIV/AIDS), Malaria and other Diseases	On Track
Ensure Environmental Sustainability	Achievable if certain measures are taken
Develop a global partnership for development	Achievable if certain measures are taken

Based on the above, it is obvious that Jordan is moving on the right track in achieving most MDGs; yet progress is more noticeable in early assessment points with regards to goals which the reform agenda, i.e. the national agenda, had an immediate effect. Table (26) below shows Jordan progress in achieving the MDGs indicators.

TABLE (26) JORDAN PROGRESS IN ACHIEVING THE MDGS INDICATORS⁵³

Indicators	Years					
	1992 1990	2002 2001	2006	2008	2009	2015
Goal: Eradicate Extreme Poverty and Hunger m						
Proportion of population below extreme poverty line	6.6	4	2.3	0.75	-	3.3
Poverty gap ratio	5.3	3.3	2.8	2.6	-	2.7
share of poorest 20% quintile in overall consumption	6.5	6.9	7.7	11.2	-	10
Employee's per capita share of GDP in Jordan/JD	5430	4732		6652	6606	

⁵⁰ Source: <http://www.mop.gov.jo/uploads/executive%20program%202007-2009.pdf>

⁵¹ Source: <http://www.mop.gov.jo/uploads/Overview-Ex%20Development%20Program%202011-2013-March%202011.pdf>

⁵² Second National Millennium Development Goals Report, Jordan 2010, Ministry of Planning and International Cooperation and United Nations in Jordan: <http://www.mop.gov.jo/uploads/executive%20program%202007-2009.pdf>

⁵³ Source: Second National Millennium Development Goals Report, Ministry of Planning and International Cooperation and United Nations in Jordan: www.mop.gov.jo/uploads/JORDAN%20MDG%20Eng%20final%204-11%20low.pdf

Employment-to-population ratio	34.4	34	32.7	34.5	35	
Proportion of own-account and contributing family workers in total employment	19.2	18.9	-	15.5	15.9	
Prevalence of under-weight children under 5years of age(%)	6.4	4.4	-	-	1.9	3.2
Proportion of population below minimum level of dietary energy consumption	6.6	4	2.3	-	-	3.3
Goal2: Achieve Universal Basic Education						
Net enrolment ratio in basic education	86.7	96.2	97.6	97.6	97.6	100
Proportion of pupils starting grade 1 who reach 5 grade	92.2	96	99	99	99	100
Literacy rate of 15-24 year-old	97.4	98.72	-	99.1	99.1	100
Goal3: Promote Gender Equality and Empower Women						
Ratio of girl to boys in basic education	94	96	96	96.3	97.8	100
Ratio of girls to boys in secondary education	105	102	104	104	110	100
Ratio of girls to boys in tertiary education	104	112	-		107	100
Share of women in wage employment in the non-agricultural sector	11	14.4	13.8	15.7	16.2	50
Proportion of seats held by women in national parliament	-	-	5.8	6.4		*
Goal4: Reduce Child Mortality						
Children under five mortality rate per 1.000 live births	39	27	-	-	28	13
Infant mortality rate (0-1year) per 1.000 live births	34	22	-	-	23	11.3
Proportion of 1year-old children immunized against measles	85	95.2	-	-	103	100
Goal5: Improve Maternal Health						
Maternal mortality ratio per 100.000 live births	48	-	-	-	19	12
Proportion of births attended by skilled health personnel (%)	87	99	-	-	99	100
Contraceptive prevalence rate	40.2	55.8	-	-	59.3	65.8
Adolescent birth rate	7.4	4.3	-	-	4.7	2
Antenatal care coverage (at least one visit and at least four visit)	80.2	98.6	-	-	98.8	100
Unmet need for family planning	22	11		12	11	-
Goal6: Combat HIV/AIDS, Malaria and other Major Diseases						
Proportion of population with advanced HIV infection with access to antiretroviral drugs	100	100	100	100	100	100
Tuberculosis incidence rate per year per 100.000 population	14	6.4	-	-	6	-
proportion of tuberculosis cases detected and cured under directly observed treatment short course	60	77	-	-	86	100
Goal7: Ensuring Environmental Sustainability						

Proportion of land area covered by forest	0.44	0.84		0.9		*
Carbon dioxide emissions, total, per capita and per \$1 GDP (PPP)	2.2	-	2.3	-	-	
Consumption of all Ozone-Depleting Substances in ODP metric tons	100	7	-	-	-	
Proportion of terrestrial and marine areas protected	0.14			1.4		*
Proportion of species threatened with extinction						
Mammals	-	11	-	10.3		
Birds	-	0.2	-	1.6		
Reptiles	-	5	-	7.8		
Amphibians	-	25	-	-		
Vascular Plants	-	5	-	1		
Proportion of population using an improved drinking water source	92.8	97	98.1	98.4		*
Proportion of the population using improved sanitation facilities	48	60.1		62.15		70
Goal8: Develop a Global Partnership for Development						
Ratio of external debt to GDP	-	74.6	-	22.5	21.7	*
Average custom tariff applied	-	13.1	11.5	10.8	,-	
FDI to GDP (%)	-	5.4	15.8	12.5	9.6	
Mobile cellular telephone subscriptions per 100 population	-	20.8	-	94.3	96.5	*
Telephone lines per 100 population	-	57	-	30.7	26	*
Personal computers per 100 population	-	9.8	-	39.3	54.3	*
Internet users 100 population	-	4.8	-	21.6	25.8	*

Despite the variant pace of progress in achieving the MDGs, it is worth mentioning that Jordan has made great progress in the area of providing education for all, as evidenced by the country's education indicators at the holistic, gender and region levels and the focus now is moving towards the quality of education.

The government of Jordan is also paying great attention to addressing the poverty and unemployment phenomena and creating jobs, providing training and employment opportunities for youth in the working age.

The above indicators provide evidence that top priority has been given during the past years to health, with a view to achieving higher levels of health for all Jordanians. Focus has been on maternal and child health, which still requires more work and effort in order to reach the level of best international practices in this area.

On the other hand, great importance is being devoted to the environment; as achieving a sustainable environment now falls within national priorities, this includes controlling greenhouse gases, advancing biological diversity, conserving all types of protectorates, and combating desertification, as well as air, water and soil pollution.

As far as women's empowerment and gender equality are concerned, Jordan has made significant strides in terms of providing education for females, yet a bit less progress in terms of achieving women's political empowerment, and enhancing their economic empowerment.

B. USE OF ICT FOR ACHIEVING THE MDGS

All previous chapters and sub-sections, including "ICT Applications" and "ICT Capacity building", included many examples on how ICT in Jordan is being used to catalyze development. The "Contribution of ICT Sector to National Economy" section shed the light on the measurable impact ICT have on development in Jordan. As mentioned earlier, ICT contribution to the GDP in 2008 reached 14.1%, 9.5% as direct contribution and 4.62% as indirect contribution by enabling other economic sectors⁵⁴. It was also mentioned that ICT in 2008 created more than 80,000 new jobs divided between direct employment in the ICT sector and indirect and induced employment in other economic sectors. In addition, ICT increased the potential for the Jordanian economy to benefit from a large female workforce since tasks using ICT tools do not require physical effort, and they minimize location restrictions and increase the flexibility of working environment.

This macro-level improvement was due to the comprehensive restructuring of the Jordanian economy in the last decade which strove to develop the level of ICT infrastructure, services, and facilities by having an enabling environment that attracts investments in the ICT sector; through public and private sector partnerships (PPP) locally and internationally, in order to provide access to good quality, diverse and affordable ICT services within the framework of an effective regulatory environment and adequate infrastructure.

In return, ICT development and deployment contributed to the restructuring of the education sector and the improvement of employees' productivity. In 2008, ICT contribution to Jordan's labor productivity reached 22.1% mainly affected by the impact of the financial sector and the education sector. The following indicators demonstrate the impact of ICT on the education sector⁵⁵:

- Productivity: 22.2%
- Labor Productivity: 48.3%
- Employment: 11,700 Jobs
- Female gender aspect correlation factor: 0.91

JEI efforts mentioned earlier are real examples of effective integration of technology in education by computerizing some curricula and training teachers on the strategies and tools of using technology in education. These efforts led to the improvement of the quality of education and believed to contribute to the progress in achieving education goals.

ICT development and deployment also contributed to the development and enhancement of the Health sector in Jordan. ICT was responsible for creating, in 2008, 2,041 jobs in the health sector (98% of which came from indirect employment, and the remainder from induced employment)⁵⁶. It is also believed that ICT initiatives in the health sector such as Hakeem which aims to facilitate efficient and improved healthcare to patients, by providing real time and up to date electronic medical information throughout the public health system will contribute to the progress in achieving health related MDGs, especially in terms of reducing child mortality and improving maternal health.

Examples of ICT related programs and initiatives that are believed to contribute to the achievement of environment, (water and agriculture) related MDGs include the establishment of an R&D unit at the Ministry of water and irrigation to carry out, the duties and responsibility of engaging in technology-transfer and

⁵⁴Economic Impact of ICT in Jordan study 2009, Ministry of Information and Communications Technology

⁵⁵Economic Impact of ICT in Jordan study 2009, Ministry of Information and Communications Technology

⁵⁶Economic Impact of ICT in Jordan study 2009, Ministry of Information and Communications Technology

technical cooperation mechanisms in ground water exploration, management and quality control with a view to facilitating technology-transfer in water and irrigation as well as promoting the use and adoption of modern technologies by farmers for irrigation, water protection, use, reuse, and distribution.

Another example is issuing an action plan for the development of Jordan's agriculture landscape in different subsectors of the economy by the Ministry of Agriculture; an action plan that includes a set of actions and projects that, among which, stress the need for optimal utilization of Information Technology. To this effect, several measures were introduced such as a technology-transfer mechanism to promote the adoption, promotion and deployment of innovative and modern technologies in agricultural development with a view to raise the proportion of self-sufficiency in agricultural products whilst simultaneously keeping abreast of rapid developments in the field of bio-technology and studying agricultural input by using integrated pest management technologies.

REFERENCES

1. Telecommunications Law No. (8) of 2002, Official Gazette, No. 4416, dated 17.02.2000.
2. Statement of Government Policy on the Information and Communications Technology Sectors and Postal Sector 2003 http://www.moict.gov.jo/downloads/ICT_Policy_2003.pdf
3. Statement of the Government Policy 2007 on the Information and Communications Technology and Postal Sectors 2007:
<http://www.moict.gov.jo/Gov%20POLICY%20%202007%20ICT%20and%20Postal%20Sectors%20Eng%20an.pdf>
4. National ICT Strategy of Jordan (2007-2011), http://www.intaj.net/sites/default/files/National-ICT-Strategy-of-Jordan-2007-2011_0.pdf
5. Telecommunication Regulatory Commission official website: www.trc.gov.jo
6. Diffusion and Usage of ICT in Household Survey, 2009. Ministry of Information and Communications Technology and Department of Statistics.
7. Diffusion and Usage of ICT at Enterprises Survey, 2008. Ministry of Information and Communications Technology and Department of Statistics.
8. Jordan Education Initiative official website: www.jei.org.jo
9. Knowledge Stations official website: www.ks.gov.jo
10. Oasis 500 official website: <http://www.oasis500.com>
11. I-Park official website: www.ipark.jo
12. National E-commerce Strategy, Ministry of Information and Communications Technology, <http://www.moict.gov.jo/Proposed%20Ecommerce%20Strategy%20Final.pdf>
13. Department of Statistics.
14. King Abdullah II Fund for Development official website: www.kafd.jo
15. Electronic Health Systems official website: www.ehs.com.jo
16. Al Manar Project official website: www.almanar.jo
17. National Jordanian Committee for Arabic Dhakhira official website: www.dhakhira.jo
18. Scientific Research Support Fund official website www.srf.gov.jo
19. Jeeran.com official website: www.jeeran.com
20. Arabian Business.com official website: www.arabianbusiness.com
21. ESCWA Technology Centre for Development, www.escwa.un.org/divisions/ictd/etc/about.asp
22. The annual Analysis Report of Jordan's Ranking in the GITR Report, Ministry of Information and Communications Technology: http://moict.gov.jo/ar_MoICT_tkrer.aspx
23. The 2009 ICT and ITES Statistics and Yearbook.

24. Economic Impact of ICT in Jordan study 2009, Ministry of Information and Communications Technology.
25. Jordan National Agenda, <http://www.nationalagenda.jo/tabid/53/default.aspx?Location=1>.
26. Al Urdonia Lil Ebda official website: www.bic.jo
27. Support to Research & Technological Development & Innovation Initiatives and Strategies in Jordan, www.srtd-eujo.org
28. Social and Economic Development Plan (2004-2006), Ministry of Planning and International Cooperation:
http://www.mop.gov.jo/pages.php?menu_id=208&local_type=0&local_id=0&local_details=0&local_details1=0
29. The Executive Program (2007-2009), Ministry of Planning and International Cooperation:
<http://www.mop.gov.jo/uploads/executive%20program%202007-2009.pdf>
30. The Executive Development Program (2011-2013), Ministry of Planning and International Cooperation:
<http://www.mop.gov.jo/uploads/Overview-Ex%20%20Development%20Program%202011-2013-March%202011.pdf>
31. Second National Millennium Development Goals Report, Jordan 2010, Ministry of Planning and International Cooperation and United Nations in Jordan,
www.mop.gov.jo/uploads/JORDAN%20MDG%20Eng%20final%204-11%20low.pdf

ANNEXI

Core ICT Indicators

Table 1 - Indicators on ICT infrastructure and access

Core indicator		2008	2009	2010
A1	Fixed telephone lines per 100 inhabitants	8.9%	8.4%	8%
A2	Mobile cellular telephone subscribers per 100 inhabitants	91%	101%	106%
A3	Fixed Internet subscribers per 100 inhabitants	3.8%	3.5%	3.4%
A4	Fixed broadband Internet subscribers per 100 inhabitants	2.2%	2.8%	3.1%
A7	Percentage of population covered by a mobile cellular telephone network	99.9%	100%	100%
A9	Mobile cellular prepaid tariffs, in US\$, and as a percentage of monthly <i>per capita</i> income	15	13.8	-

Table 2 - Indicators on access to, and use of, ICT by households and individuals

Core indicator		2008	2009
HH1	Proportion of households with a radio	38.7%	-
HH2	Proportion of households with a TV	98.7%	-
HH3	Proportion of households with telephone		
	Proportion of households with fixed telephone*	30.7%	26.0%
	Proportion of households with mobile cellular telephone*	94.2%	96.5%
HH4	Proportion of households with a computer	39.3%	54.3%
HH5	Proportion of individuals who used a computer (from any location) in the last 12 months	53.5%	54.8%
HH6	Proportion of households with Internet access at home	13%	18.4%
HH7	Proportion of individuals who used the Internet (from any location) in the last 12 months	21.6%	25.8%
HH8	Location of individual use of the Internet in the last 12 months		
	Home	41.7%	55.1%
	Work	25.7%	24%

Core indicator		2008	2009
	Place of education	46.3%	38.2%
	Another person's home	10.9%	6.2%
	Community Internet access facility	6.5%	3.1%
	Commercial Internet access facility	27.9%	18.4%
HH9	Internet activities undertaken by individuals in the last 12 months (from any location)		
	Getting information about goods or services	8.2%	8.6%
	Getting information related to health or health services	24.7%	39.5%
	Getting information from general government organizations	20.4%	18.1%
	Interacting with general government organizations	12%	13.4%
	Sending or receiving e-mail	52.2%	54.2%
	Posting information or instant messaging	42.7%	49.1%
	Purchasing or ordering goods or services	3.5%	2.3%
	Internet banking	4%	3.6%
	Education or learning activities	5.5%	3.8%
	Playing or downloading video games or computer games	49.7%	59.8%
	Downloading movies, images, music, watching TV or video, or listening to radio or music	59%	64.6%
	Reading or downloading on-line newspapers or magazines, electronic books.	56%	61.1%
HH11	Proportion of households with access to the Internet by type of access (narrowband, broadband (fixed, mobile))		
	Narrowband	38.6%	16.3%
	Fixed broadband	52.6%	60.5%
HH12	Frequency of individual use of the Internet in the last 12 months (from any location)		
	At least once a day	35.2%	41.5%
	At least once a week but not every day	33.7%	37.8%
	Less than once a week	26.4%	20%
HHR1	Proportion of households with electricity	100%	100%

*Proportion of households with fixed telephone or mobile cellular telephone regardless of simultaneous ownership. No information is gathered for proportion of households with (ONLY) fixed telephone or with (ONLY) mobile cellular telephones.

Table 3 - Indicators on use of ICT by businesses

Core indicator		2008
B1	Proportion of businesses using computers	61.73%
B2	Proportion of persons employed routinely using computers	30.89%
B3	Proportion of businesses using the Internet	48.48%
B5	Proportion of businesses with a web presence	28.30%
B6	Proportion of businesses with an intranet	19.68%
B7	Proportion of businesses receiving orders over the Internet	3.35%
B8	Proportion of businesses placing orders over the Internet	4.12%
B9	Proportion of businesses using the Internet by type of access (narrowband, broadband (fixed, mobile))	
	Narrowband	13.45%
	Fixed broadband	122.45%*
	Mobile broadband	-
B11	Proportion of businesses with an extranet	8.31%
B12	Proportion of businesses using the Internet by type of activity	
	Sending or receiving e-mail	87.2%
	Telephoning over the Internet/VoIP, or using video conferencing	33.10%
	Getting information about goods or services	93.98%
	Interacting with general government organizations	30.41%
	Providing customer services	62.62%

*Value is greater than 100% since businesses can use more than one type of access service and multiple responses are possible.

Table 4 - Indicators on the ICT (producing) sector

Core indicator		2008
ICT2	ICT sector share of gross value added (expressed as a percentage of total business sector gross value added).	14.1% (Direct 9.5%) (Indirect 4.6%)