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NATIONAL PROFILE OF THE INFORMATION SOCIETY
IN YEMEN

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Introduction

The world is very optimistic about the enormous potential of Information and Communications Technology (ICT) sector in promoting economic and social development. The impact of the new tools of this sector are not restricted to the change and development of different economical sectors but goes beyond that in ICT sector to become one of the most prominent and promising sectors. This is due to the, developmental and renewable economical opportunities and advantages that it can provide.

In light of that, the trend to establish an information society was not a goal in itself, but a major tool for community development. This can be achieved through the use of new data and the effective harnessing of ICT to support the essentials of economic development and achieving the developmental goals of the community. This is what makes the information society a golden opportunity for different countries worldwide and developing countries in particular.

The findings and decisions of the World Summit for the Information Society held on two phases in Geneva 2003 and in Tunis 2005[1] represented a practical framework for the efforts and endeavors of states, governments, institutions, international partners, and business sectors towards establishing the information society. Whilst, there are several ways, fields, and levels of interest of a number of countries that reflect their priorities and the level of their ability to take advantage of ICT for the development of their societies, a number of developing countries are still below the desired level in taking advantage of the potentials of ICT to improve productivity and their citizens' quality of life.

The ICT sector has received considerable attention in Yemen. In recent years, it witnessed a series of transformations and developmental steps, which aimed at creating a society of information necessary to support efforts for development. Yemen was able to attain a number of achievements in the areas of preparing the infrastructure, developing policies, plans and legal and regulatory frameworks, promoting opportunities for empowerment, and free flow of information, the right to communicate and access information, electronic applications, and building human skills and abilities.

By reviewing the current situation and evaluating the elements and indicators of progress towards the information society of Yemen, the following sections describe the basic features of the Yemeni information society in the Republic.

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[1] http://www.wsis.org

I. THE ROLE OF THE GOVERNMENT AND ALL STAKEHOLDERS

A. NATIONAL INFORMATION SOCIETY POLICIES AND E-STRATEGIES

The Yemeni efforts and orientations to build the information society can be reviewed through the following:

1.   In 1995, the National Information Center was established as an institution to take a leading role in laying down, proposing and implementing development policies in the field of information. In 2000, the center started to take concrete steps towards the establishment of an information infrastructure and adopted many projects in the informatics infrastructure such as the national strategy for information, the national information network, and the informatics institute. Later on, the center adopted a number of other projects like community service centers, the Yemeni e-library, etc... In addition to that, the center performed a number of tasks and activities, the most important of which is publishing data and information and making it acceptable to the citizens and institutions.[2] The national information center, with the help of a wide range of public and private sector institutions, adopted a national initiative related to the information national policy and strategy and the sectoral strategies. The documentation of policies and strategies was completed in cooperation with the ESCWA organization, yet the project was not approved. In the first phase of the implementation of the project of the National Network for Information, the center was able to achieve a number of steps which aimed at creating an effective information system to facilitate the preparation and exchange of data and information between different government institutions, business sector, citizens, and beneficiaries. It is a project that has been adopted and approved by the government since 2001under the five years plan for economic and social development. However, the results achieved are not commensurate with the importance of the project and its objectives. That is due to low financial annual allocations, and the lack of an external financing source. The project started its initial application networking with a number of government bodies;

2.   In 2003, the Ministry of Telecommunications and IT was established. Based on the Ministry's proposal to adopt a "strategy for ICT", the strategy was approved by the Government as part of the National Strategy to support the integrated development plans (2001-2005), which focused on the provision and facilitating ICT services. In 2002, the Ministry also announced the initiative of the national program for IT (e-government);[3]

3.   With The issuance of Law No. 28 for the year 1995 concerning statistics, the Central Bureau for Statistics of the Ministry of Planning and International Cooperation, adopted a national strategy for statistical work;

4.   The third plan for economic and social development (2006-2010)[4] adopted a number of policies and actions aiming at developing the ICT sector through building the economy of knowledge. The following is a review of the level of progress in the implementation of these policies between 2007-2008:

(a)   With respect to the restructuring of the telecommunications and information sector institutions to keep pace with developments, and to prepare a plan to privatize the telecommunications sector,[5] work was done to restructure of the Ministry of Telecommunications and Information Technology and the Establishment of Public Telecommunications Corporation. The new proposal required the establishment of an institution that

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[2] You can find more about the activities of the National Information Center on the website: http://www.yemen-nic.info

[3] Communications and Information Technology in Yemen, the Ministry of Communications and Information Technology, November 2005, p. 39, p. 63.

[4] Plan of economic and social development of the third Poverty Reduction (2006-2010), Ministry of Planning and International Cooperation, August 2006, p. 115, 162.

[5] Journal of Communications and Information Technology, number (88), October 2008, the Ministry of Communications and Information Technology, Republic of Yemen, p. 40.

regulates communications and is responsible for supervising all operators in the telecommunications sector. In addition to that, the Ministry of Telecommunications and Information Technology prepared a new draft law for ICT to accommodate changes and developments in the structure of ICT. The draft law was approved by the Government under decree (393) for the year 2008. It was forwarded to the Parliament to complete the constitutional procedures. The Ministry also finished preparing a list to regulate the cost of the use of frequencies and radio equipment, and the issuance of a list for the regulation of communication centers and clubs and Internet cafes;

(b)   A study was prepared to assess the current situation of the telecommunications infrastructure, and expand the number of the country exchange points and reallocate surplus exchange points to needed areas, to respond to the demands for telecommunications services, and provide universal services and increase its outlets to cope with population and economic growth. Next Generation Networks (NGN) were installed in Aden and Mukalla and the capacity of the external brass network was increased. The telephone capacity of the telephone network (fixed + Yemen Mobile) on the island of Socotra was also expanded;

(c)   In relation to providing modern ICT equipment in the context of an integrated digital network for fixed and mobile telephone, services of the network were expanded and developed and 1,187 kilometres of fiber optic lines were implemented. A number of messaging stations, microwave, and modems were installed throughout the Republic. Special installations equipment were prepared for the (SUB-RING2 DWDM2) project to link (9) governorates.[6] Regarding the attention paid to rural areas, a total of (43) thousands telephone lines, including fixed wireless telephone systems (FWT) working with (CDMA - WLL) technology were installed.[7] In the review of tariffs of telecom services, the fixed telephone tariffs between the governorates were reduced from 7 to 4.5 YR in peak time and 2.5 YR in the evening. Internet Tariffs were also cut down by 30 per cent;

(d)   To promote private investments in telecom and IT a third operator for mobile telephones using (GSM) system was introduced. This showed a kind of success in attracting foreign investment, with local participation. New encouraging conditions were also prepared for the granting of ISP licenses. In addition to that, a national program that provides comprehensive communication services including ICT community centers in all residential areas, and incentives to invest in this field was prepared;

(e)   To issue a law of information and the freedom of exchanging it, and to prepare regulations and manuals governing the information management in government institutions, the National Information Center prepared a draft law, which was approved by the government and presented to Parliament under resolution no. (431) for the year 2008. In turn the Parliament referred it in February 2009 to the relevant committee to study it.

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

Yemen is heading towards the formulation of new forms of partnerships based on complementarity between different categories of stakeholders from the public and the private sectors. The private sector is an active partner in preparing and planning strategies for the establishment of the Information Society. The approved strategies include clear procedures for the participation of the private sector and its reliable role in the implementation of these strategies. The information sector is considered one of the economic sectors that need further liberalization and activation of competition. That is why, the Yemeni government is seeking to develop policies and procedures, the most important of which is the restructuring of the sector in accordance with State policies and motivating economic activity and strengthening the role of the private sector. For a long time now, the private sector has participated actively in the telecom sector and its role has expanded after granting in 2000 three concessions operating a mobile telephone network to three companies: Sabafon,[8]

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[6] Journal of Communications and Information Technology.

[7] Journal of Communications and Information Technology.

[8] http://www.sabafon.com

and MTN,[9] as well as the recent entry of a new company with a GSM system HiTs Unitel (Y), which was launched in November 2007. A fourth company (Yemen Mobile) has been working since 2004 as an operator of the mobile telephone using CDMA technology (a corporation organized under the auspices of the Public Telecommunications Corporation of Yemen). The private sector runs centers for telecom services and Internet cafes. The Government is working on encouraging the private sector to establish training centers specialized in the IT field. Their number early in 2007 exceeded 300 private and public training Centers.[10]

In November 2008, the launching of the project (INTALEQ)[11] for teaching mathematics and science online to first secondary year students. The project was implemented as an act of an integrated approach under the leadership of the Ministry of Education and Teaching and funded by the Ministry, by donors, and the private sector. Its cost amounts to $ 1.442 million dollars. The project targeted four governorates.

C. Role of non governmental organization

The contribution of NGOs and civil society organizations in creating the suitable climate for change towards the information society is still minimal. At present, the number of organizations reasonably active in this area does not exceed ten organizations. In spite of that, the plan for economic and social development highly depends on the role of these organizations and their contribution in building the information society. The plan considers these organizations as still in their early stages.

II. ICT INFRASTRUCTURE

A. Infrastructure

The information and telecommunications sector in Yemen, is witnessing rapid developments that emerged through the development in size and quality of private sector investment in telecommunications and information services (mobile telephone services, increase in the number of call centers and Internet cafes, software companies, etc.).

1. *Fixed and mobile telephone networks and percentage of its accessibility*

The density of fixed telephone lines increased from (4.4) telephone line per hundred citizens in 2005 to 4.74 in 2007. This was due to the expansion of citizens fixed line services with a fee equivalent roughly to 60 US dollars for each telephone line. In addition to that, in mid-2007 tariffs for fixed-line calls between governorates were reduced from 7 to 4.5 Riyals during peak time and to 2.5 Riyals in the evening.

In 2007, next generation (NGN) networks were installed and operated experimentally in Aden and Mukalla. The capacity of the external copper network was also increased, with its total capacity amounting to 5,220 main line. The operating numbers of the fixed network were also increased from 968,348 numbers in 2006 to 1,021,988 numbers in 2007.

The rural telecommunications services are still rather low. In recent years, the Public Telecommunications Corporation has been working on using the communication systems appropriate for the natural terrains. In 2007, a number of fiber optic booths, were installed in a number of sites. Similarly some permeability systems with a total capacity of 34,171[12] telephone lines were installed. Fixed wireless telephones and digital vector systems were introduced whereby 18,702 peripheral devices were installed to serve fixed wireless telephones (FWTS) working on (CDMA-WLL) technology. That contributed to a slight

[9] http://www.mtn.com.ye

[10] Ministry of Technical Education and Vocational Training, Annual Report 2007, p. 59-64.

[11] Billy agency SABA, the Web site, http://www.sabanews.net/ar/news169652.htm

[12] Executive Report of the Government of 2007, the Council of Ministers, Republic of Yemen, p. 80-81.

improvement in the indicators of rural telecommunications services. Yet, as a result of a number of challenges and constraints, [13] Yemen remains one of the countries that was not able to take advantage of the telecommunications services. Such difficulties are due to the natural terrains of the country, the dispersion of the populations and their low density and other reasons.

In recent years (2004-2008), Yemen witnessed a remarkable development in the provision of mobile telephone services. The number of private sector companies working in this field increased to four companies. The number of Mobile telephone subscribers also increased from 2,227 million in 2005 to 4,682 million in 2007; A remarkable growth rate of 110 per cent which is the result of competition between private sector companies working in this area, their expansion in providing mobile telephone services to all the governorates and the diversity of services offered at competitive prices.

TABLE 1 – FIXED-LINES INDICATORS IN URBAN AND RURAL AREAS, 2003-2007[14]

Indicator		2003	2004	2005	2006	2007
Total capacity of the communications network (line)		1,505,192	1,564,349	1,575,169	1,580,966	1,573,476
Capacities fitted (line)		1,161,041	1,243,838	1,278,315	1,300,042	1,326,125
Population (people)		19,131,977	19,721,631	20,305,269	20,900,532	21,538,995
Teledensity (telephone / 100 people)		3.5	4.1	4.4	4.63	4.74
Lines Vacancies (line)		476,157	445,702	376,930	331,714	304,137
The number of working telephone lines (line)		684,884	798,136	901,385	968,328	1,021,988
The increase in the working telephone lines (line)		142,680	113,252	103,249	66,943	53,660
The number of main exchanges (number)		47	52	54	49	49
The number of sub exchanges (number)		208	222	223	229	229
Rural communications[15]	Rural communication capacities fitted (line)	101,344	128,385	240,245	190,575	193,578
	Lines operating (line)	62,593	96,027	124,921	156190	168,718
	The percentage of lines operating to equipped capacities (%)	62	75	52	82	87

2. *Internet Service Providers*

In 1996, the Internet service was launched with a single service provider "TeleYemen" 51 per cent of which was owned by the British Cable and Wireless company and 49 per cent by the Yemeni government. At the end of the year 2003, the ownership of the company was fully transferred to the government represented by the Public Telecommunications Corporation. In April 2002, the Corporation began to work as a second provider for the Internet service. Hence, the provision of the service has so far been monopolized

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[13] Quarterly Bulletin of the economic developments, the Ministry of Planning and International Cooperation, Republic of Yemen, p. 19.

[14] Central Bureau of Statistics 2007, Public Telecommunication Corporation, the National Information Center.

[15] Quarterly Bulletin of the changes in the economic, op; Annual Economic Report 2006, Ministry of Planning and International Cooperation, Republic of Yemen.

by the State. It should be noted here that the Yemeni government is preparing new terms and conditions[16] to promote license granting for Internet service providers, in order to create a space for new providers to enter the service. This will contribute to the improvement of network accessibility.

3. *PC Penetration*

As a result of a combination of developments in the infrastructure and the IT environment in Yemen, the number of computers used increased from 270,000 computers in 2005 to 396,000 computers in 2007. The rate of computer spread for the number of the population increased from 1.3 per cent in 2005 to 1.8 per cent at the end of the year 2007.

TABLE 2 – INTERNET AND MOBILE PHONE INDICATORS IN YEMEN, 2004-2007[17]

Indicator	2004	2005	2006	2007
Total Internet subscribers (subscriber)	74,615	109,127	155,812	205,613
Total internet subscribers per 100 persons	0.38	0.54	0.75	0.95
Number of Internet users (user)	221,000	330,000	450,000	950,000
Number of Internet users per 100 persons	1.1	1.6	2.2	4.4
Total mobile telephone subscribers	1,483,233	2,277,553	2,977,782	4,682,557
Mobile telephone subscribers per 100 persons	7.5	11.2	15.3	19.9
Number of computers in the Republic (PC)	210,000	270,000	330.000	396,000
Density of the spread of computers (computer for each one hundred persons)	1.1	1.3	1.6	1,8

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

The initiatives and projects aiming at developing the ICT infrastructure are considered the most important factor for progress in this sector. In this respect, we can refer to some of the initiatives and projects concerned with the development of this sector. The third Five-Year plan (2006-2010) approved a number of ICT projects. It also prepared a proposal to restructure the Ministry of Telecommunications and Information Technology. A list of services to regulate the remuneration of the use of frequencies and radio equipment was also prepared.[18] In addition to that, a national plan was prepared for the allocation of frequencies in the international regulations with the aim of investing them and managing their use in Yemen.[19] The mobile telephone operator (Y) which operates using (GSM) system was also licensed. New encouraging conditions for granting licenses to ISPs were prepared. A national program to provide comprehensive communication services was also prepared, including the provision of community ICT centers in all residential areas in Yemen plus giving incentives for investment in the development of new services.[20]

As concerns the ICT Infrastructure, next generation (NGN) networks were installed and operated experimentally in Aden and Mukalla.[21] A number of fiber optic paths with a length of 1,187km[22] were also implemented, as well as the installation of a number of messaging stations throughout the Republic. Added to this was the installation of the equipment of the (SUB-RING2 DWDM2) project to expand the second loop to link nine governorates. Specifications of the project for the expansion of ring 3 (SUB-RING3

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[16] Executive Report of the Government 2007.

[17] National Information Center and the Ministry of Telecommunications and Information Technology and the Central Bureau of Statistics 2007.

[18] Executive Report of the Government 2007

[19] Web site, the Yemeni news agency Saba, a dialogue with the Minister of Communications, http://www.sabanews.net/ar/news154536.htm.

[20] The Yemeni news agency SABA.

[21] Executive Report of the Government 2007.

[22] Journal of Communications and Information Technology.

DWDM3) was also developed to link six governorates. A number of studies for transmission network projects in a number of governorates were completed. The telephone capacity of the telephone network (Fixed + Mobile Yemen) on the island of Socotra was also expanded.[23] As concerns the Internet network, the current points of presence of the current regular telecommunications service (Dial-up) were increased to 6,480 ports, and the points of presence of Super Yemen Net service (ADSL) were also enhanced to 19,000 subscribers. In the context of the projects for developing and expanding telecommunications services, the project (Falcon), the sea cable (Hodeidah - Ghaydah)[24] was completed.

In addition to that, the government planned to work on infrastructure development through a number of core projects approved by the Development Plan. These include the national information network project as well as a number of other information infrastructure projects.

C. ICT CONNECTIVITY

The number of subscribers to fixed telephone services increased from 685,000 subscribers in 2003 to 1,022,000 at the end of 2007. Therefore, the rate of spread of fixed telephone services increased from 3.5 per cent to 4.74 per cent. The volume of processed capacities increased from 1,161,000 telephone lines in 2003 to 1,326,000 at end of the year 2007. At the end of 2007, the number of sub exchanges was 229. The number of public telephone service centers in all governorates was 13,769 centers.

By the end of 2007, rural communication lines increased[25] from 8,000 lines in 2000 to 156,000 lines. While the number of rural telecommunications stations until the end of 2007 was approximately 1,228 stations, including fiber optics booths. Whereas the coverage of rural areas increased from 449 stations in 2000 to 1,228 stations at the end of 2005, equipped telephone capacities in rural communications network also increased from 13,450 lines in 2000 to 193,578 telephone lines at the end of 2007. Whereas the mobile telephone penetration ratio increased from 0.15 per cent in 2000 to 19.9 per cent in 2007.

Moreover, international telecommunications services were extended to reach a total capacity of 3812 telephone channels distributed on the systems (1414 Satellite channel, 655 Sea cable channels, 1743 fiber optic channels). Besides, the government recently established a new international exchange with an initial capacity of more than a thousand international channels using modern technologies to link the Republic of Yemen with all countries of the world. These developments were accompanied by an increase in the number of computers used in Yemen from 36,600 computers in 2000 to 396,000 computers in 2007. The rate of computer spread in relation to the number of the population increased from 0.2 per cent in 2000 to 1.8 per cent at the end of 2007. During the year 2005, the ratio of population able to use the computer reached 2.7 per cent.

Since the Public Telecommunication Corporation became a second ISP, the number of subscribers to the service increased in recent years from 46,157 subscribers in 2004 to 205,000 at the end of the year 2007, at a rate of 0.95 subscriptions per 100 persons. While the number of Internet users increased from 24,000 users in 2000 to 950,000 users in 2007 and a spread rate of the Internet service was 4.4 per cent per 100 persons. the number of Internet cafes also increased in most cities of Yemen to reach 925 café in 2007, the thing which enables a wide sector of the population to deal with IT and make use of it.

D. INTERNET INFRASTRUCTURE

Since 1995, Yemen has been connected to the outside world through a fiber optic network and through a sea cable with a length of 226 km to Djibouti and there from to a number of Arab countries, South-East

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[23] Journal of Communications and Information Technology.

[24] Journal of Communications and Information Technology.

[25] Web site, the Public Telecommunication Corporation: http://www.ptc.gov.ye/index.php?q=news_d&id=333 # top.

Asia and Europe. At the end of 2006 and as a first stage, the Ministry of Telecommunications and IT announced the launch of wireless Internet service (Wi-Fi) with 17 hot points located in Sana'a and Aden.

Since 1996, the (Dial-Up) telephone lines in Yemen remained the means available for users to access the Internet. The number of its subscribers in the mid of 2008 was 224,310 as opposed to 109,127 subscribers in 2005. In 2001, the (ISDN) service was introduced at a speed of 64 Kb/s, and then at 128 Kb/s. In 2005 (ADSL) service was introduced at speeds of up to 512 Kb/s. In mid 2006, the number of subscribers to this service did not exceed 2,781, but by the mid of 2008, the number of its subscribers went up to 13,512, this shows that the service was not spreading as it should, which could be attributed to its relatively high cost. Now, the tariffs of the service are determined according to the size of the information. For maximum capacities of (5 Gb-7 Gb-9 Gb-11 Gb), the monthly fees are (2000-3500-5500-7500) Riyals respectively, at speeds of (158-256-512-1024). In addition to this, it is currently possible to provide leased line services at speeds between 64 Kb/s and 2Mb/s.

In 2007, the number of subscribers to the data transmission network service was 245 subscribers.[26] This network is considered one of the important projects taken by the Ministry of Telecommunications and IT. It is a broadband digital network which covers most of the governorates.

At the end of 2007, the number of sites hosted by the Internet portal of Yemen (YemenPortal.net) was 915 sites, as compared to only 185 sites in 2005. In 2000, the number of public Internet cafés was 50 café, whilst in 2007 the number increased to 925, with an average of 6 Internet-enabled computers per café. The Ministry of Telecommunications and IT, has concluded[27] the preparation of the technical study for the implementation of the wireless internet project (WiMAX).

III. ACCESS TO INFORMATION AND KNOWLEDGE

A. PUBLIC DOMAIN INFORMATION

In Yemen, accessing information through the Internet is given a growing interest from individuals and institutions alike. Many ministries and organizations act on publishing their data on the Internet through their own websites. At the end of 2007, the number of sites hosted in the Internet portal of Yemen (YemenPortal.net) was 915 different websites. Many of these sites issue reports and printed bulletins on the government performance and the performance of institutions. In addition to that, the National Information Center provides services to supply users with the information needed. The services provided by the Center are free of charge.

Recently, the government has begun to provide all information related to government tenders and publish them through the website of the National Information Center. This information is updated regularly. The Ministry of Local Administration carried out a survey to check for the readiness of governorates to implement the informatics systems which were provided by the Ministry as part of a networking project for the local authority information system.

B. ACCESS TO INFORMATION AND PUBLIC INFORMATION

Citizens can access the information available through the websites of government institutions. The Internet cafés are amongst the most prominent access points for information published on the websites of Yemeni agencies and institutions, or information on the Internet in general.

The number of Yemeni bodies which owns websites has remarkably increased, but few of them are distinguished by the size and quality of information offered and the frequency by which information is

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[26] Web site, the Public Telecommunication Corporation: http://www.ptc.gov.ye/index.php?q=news_d&id=333 # top

[27] Journal of Communications and information Technology.

updated. The website of the National Information Center[28] is among the distinguished sites in this regard. Although the Ministry of Telecommunications and IT has reduced communications tariffs, yet they are still considered relatively high when compared with the level of income per capita, which is low. Hence, the poor and the disadvantaged groups are not able to access information published on websites.

C. MULTI-PURPOSE COMMUNITY PUBLIC ACCESS POINTS

Internet cafés and call centers are considered key access points available to the citizens. In 2007, the number of public Internet cafés was 925 cafés, with an average of 6 Internet-enabled computers per café. One of the main services provided in Internet cafés is the Internet access service with fees not exceeding one Riyal per minute (equivalent to US $ 0.05/minute). In 2007, the number of call centers reached 13,769 centers in all governorates. However, in rural areas of Yemen there is a limited number of call centers and therefore there are few opportunities for citizens in these areas to access the network.

On the other hand, the access service currently provided by the National Information Center through its main office has been expanded to include a unit specialized in accessing public information and another unit in the University of Sana'a. These units have been created in cooperation with the World Bank. In addition to these units, the center operated in the governorates 3 sub- coordination offices to facilitate the provision of services to the public in these governorates. A number of the main governorates had started in coordination with the Center to establish information centers at the governorates headquarters (the first phase included 4 governorates). The Third Five-Year Plan for Economic and Social Development 2006-2010, endorsed as a first stage a project to create 14 information centers for community services in cities and rural areas in a number of governorates in addition to establishing 60 information units in institutions and governorates, and networking them to the National Information Center. The evaluative report on the results of the implementations showed that the lack of funding for the project caused a delayed start.

D. USING DIFFERENT SOFTWARE MODELS

Several government institutions and private sector establishments headed towards introducing and using automation systems and information networks. A number of bodies succeed in this aspect of development, such examples are: the human resource system, the biometric fingerprint system at the Ministry of Civil Service, the accounting and financial information system at Ministry of Finance, the financial analysis and management of loans and aid system, and the foreign remittance system. In addition to many other systems and networks which transferred the works of the Yemeni Central Bank to automated systems.

Amongst the other institutions and ministries that introduced automated systems to their areas of work are: the Ministry of Telecommunications and IT, the National Information Center, the Central Organization for Control & Accounting, the Central Bureau for Statistics, the Customs Department, the Ministry of Foreign Affairs, the Ministry of Interior, the Ministry of Technical Education and Vocational Training, the Ministry of Education, the Supreme Judicial Council, the Ministry of Tourism, the Department of Civil Affairs,[29] and the Immigration and Passports Department.[30] Many institutions are conducting development processes on the systems they use. But the absence of common standards highlight the incompatibility between the systems and applications used and the weakness of their integration amongst institutions, thus reducing the chances of their use together when moving to provide integrated e-services.

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[28] http://www.yemen-nic.info

[29] Executive Report of the Government 2007.

[30] Executive Report of the Government 2007.

IV. ICT CAPACITY BUILDING

A. BASIC LITERACY

Yemen is making significant efforts to combat illiteracy, which amounts to 40.7 per cent.[31] Recent years have witnessed increased enrollment in literacy centers, bringing the number to 97.395 students in (2006 - 2007).[32] This was accompanied by an increase in the number of educational and training centers, yet the rate of basic illiteracy is still high, where in 2007 it reached 45.7 per cent for the age group 10 years and over. The highest rates of illiteracy are stationed in rural areas. The reasons behind the high rate of illiteracy are attributed to the poor services in rural areas, non-application of mandatory primary education, the inefficiency of primary education, the spread of poverty, and the meager of the financial allocations for literacy programs.[33] Despite efforts to obliterate illiteracy, the use of methods and programs for that purpose is almost non-existent and is not given its due attention in the programs implemented by the stakeholders.

B. ICT IN EDUCATION AND TRAINING

Yemen was included in the Fast Track Initiative for the development of education presented by the World Bank in 2004.[34] There are currently 605 schools equipped with computers, and the Internet service was introduced to 55 per cent of the Republic's schools. In 2007, 500 schools were equipped with computer labs for the training of students. A computer course was introduced to secondary education, where 200 thousand copies of the book on the computer course were distributed on various schools in the republic, and 355 computers were also distributed to a number of schools in the governorates of (Sana'a, Rima, Amran, Mahwit, Dali).[35] In addition to that, 233 television sets, Receivers, and projectors were distributed to learning resource schools, and 3,000 copies of the technical manual for learning resource centers were printed and distributed[36]. In 2007, an IT center was established in the Ministry of Higher Education as part of a program to establish an IT institute that will link Yemeni universities to a single information network.

Moreover 732 teachers were trained in the field of computer skills. The number of training programs in the field of ICT was 5,800 training courses during the period from January to July 2008.[37] A number of public and private university facilities are also teaching a number of ICT disciplines kike Communication Engineering, engineering and programming, computer science, and information science, but the curricula are not being updated enough to keep pace with rapid developments. Yemen approved the National Strategy for Primary Education 2003-2015, the National Strategy for Technical Education and Vocational Training (2005-2014), in addition to the national strategy for the development of higher education 2006-2010. The majority of these strategies are looking forward to achieve the primary objectives of the integration of IT in the different stages of education. In November 2008, a project was launched,[38] Yemen Innovations in Technology-Assisted Learning for Educational Quality (INTALEQ)[39] to teach through the web science and math for first grade secondary education. The project will be implemented in 20 Schools of the Capital, Aden, Taiz and Hadramout starting from February 2009. Some private university education institutions are making a number of courses available for students to study through the websites within an initiative to adopt

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[31] Central Bureau of Statistics.

[32] Central Bureau of Statistics.

[33] Report of the Supreme Council for Educational Planning, released in part on the link:
http://www.almotamar.net/news/37275.htm

[34] Plan of economic and social development (2006-2010).

[35] Executive Report of the Government, 2007.

[36] Executive Report of the Government, 2007.

[37] semi-annual report of the Executive of the Government (January-June 2008), Council of Ministers, Republic of Yemen, August 2008, p. 10, p. 41.

[38] The Yemeni news agency Saba, op, http://www.sabanews.net/ar/news169652.htm.

[39] Web site for the project is not available at the present time the fact that the project is still in its infancy.

the idea of distance education. The limitations of such an activity are stressed. Since distance education applications are still in their infancy.

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

Many Yemeni institutions Contribute to the development of human resources needed to support the dissemination of ICT. The Ministry of Telecommunications and IT established a Center for the Development of Innovators, which works on the creative development of ICT innovative ideas and turning them into industrial projects and IT industries.[40] The General Telecommunications Institute contributes to organizing training programs for government workers and youth. During 2007, the Institute trained 1,255 trainees in ICDL.[41] In 2007, 508 distance learning cards were issued within a system for e-learning obtained by the General Telecommunication Institute from the GMC-TINCCLS organization. Through these cards the subscriber gets on the easy education in more than four hundred specialties, at low cost, at any time, from any place he wants. The Institute provides this service for little minimal fees set at no more than 1,800 Riyal for a three-month program, after which the trainee gets a recognized electronic certificate. The institute also developed and equipped a training center in the city of Mukalla, and made contracts to provide equipment to Microsoft, Oracle labs, CISCO modern labs, and to establish computer labs, and provide equipment to the Institute branches in five governorates. During the period between October 2006 and June 2008, 14,469 trainees from government and private sectors have been trained in technical, administrative, commercial areas, and in computer and ICDL.[42] The CISCO Academy also taught computer and Internet networks, the number of its graduates in the year 2007 amounted to 547 graduates.[43] The ICT City also organized technology summer camp for school students whereby they are trained on the computer and the Internet during the summer vacations of the years 2006, 2007, 2008.[44]

The National Information Center also worked through the Institute of Informatics on the implementation of annual programs for the training and rehabilitation in the field of information and applications of the center's staff as well as workers in institutions and government agencies. The number of trainees reached 2,014 during the period 2006-2007. The National Institute of Administrative Sciences and the General Telecommunications Institute contribute to organizing ICT training programs for staff in State agencies. The development centers of a number of universities such as Sana'a and Aden Universities and the private sector contribute to human resource development efforts through a variety of specialized training and rehabilitation centers specialized in IT and distributed in several Yemeni governorates. Until the beginning of the year 2007, the number of private training institutions[45] reached 187 IT training centers which issued 14,739 certificates in computer and its applications.

D. INNOVATION AND PATENTS

Decree No. 2 for the year 2002, was issued to establish the Higher Council for Scientific Research, the Universities' Act No. 18 for the year 1995 also included support for the development of knowledge by conducting scientific research in various disciplines. In the same framework, an IT center was created within a program set up for the establishment of an IT institute in order to link Yemeni universities with a single information network. Two lists were also prepared for scientific research priorities, and the national policy for scientific research.[46] However, there still is no clear research and development plan in the ICT field in Yemen.

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[40] Can't confirm the existence of success stories in its true sense in this aspect.

[41] site, Public telecommunications commission, op, http://www.ptc.gov.ye/index.php?q=news_d&id=333 # top

[42] Journal of Communications and Information Technology, cit, p. 41.

[43] Web site, Public telecommunications Corporation, op, http://www.ptc.gov.ye/index.php?q=news_d&id=333 # top

[44] Semi-annual report of the Executive of the Government 2008.

[45] Ministry of Technical Education and Vocational Training, Statistical Bulletin 2006, Tables 49 to 51, p. 59-64.

[46] Semi-annual report of the Executive of the Government 2008.

V. BUILDING CONFIDENCE AND SECURITY IN THE USE OF ICTS

A. USE OF ELECTRONIC TRANSACTIONS AND DOCUMENTS

Despite the interest of institutions in Yemen in the introduction of computer networks (LAN), the number of which reached approximately 253 networks in various sectors, yet those that are being operated for the procedures of conducting business and activities using electronic networks, and whatever relevant electronic exchange needed among institutions are limited. The most important which can be referred to in this aspect are the following:

- The Ministry of Industry receives and completes through the Internet transactions related to agencies and foreign companies;[47]
- Networking the Ministry of Industry and its offices in the Secretariat, Hodeidah, Hadramout, Taiz, and Aden to streamline procedures for investors;[48]
- Networking[49] Civil Status and Civil Registry with branches in the governorates and completing the interring of the automatic release system in all governorates;
- To complete networking the land, sea, and air ports exit points with authorities and the presidency of the Immigration and Passports;[50]
- Automation and networking of the judiciary.[51]

On the other hand, electronic services offered to citizens are still in their infancy; whereby no transactions or procedures can be fully processed electronically. Other than that, most government institutions provide information about the services they offer to the citizens who need them and steps needed to obtain any of the services they provide, in addition to providing the forms used to obtain a service. Some government institutions tried to provide additional forms for citizens to fill out and send in-order to get a specific service.

B. ONLINE AND NETWORK SECURITY

With the exception of the Law issued under number 40 in the year 2006 concerning payment and electronic financial and banking transactions, there are no complete and applicable legislations in Yemen today in the field of security of electronic transactions and networks and ensuring their security. However, a draft of the information law to be discussed by Parliament according to the proposal of the National Information Center contains a separate section on information security. That, in addition to the initiative announced by the Ministry of the Interior concerning its endeavors to prepare a draft law to combat cyber crime, but this initiative is still in its early stages.

C. PRIVACY AND DATA PROTECTION

The currently used information security measures are at a low level, whereby the use of simple ways of protecting and securing data and information is the most common.[52] This is due to informatics being a new science, and thus the legal regulation of this area is still in its infancy. The most important initiative in

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[47] Executive Report of the Government 2007.

[48] Semi-annual report of the Executive of the Government 2008.

[49] Executive Report of the Government 2007.

[50] Executive Report of the Government 2007.

[51] Executive Report of the Government 2007.

[52] e-government "specificity Yemeni and methodology for the ambitious", working paper submitted to the meetings of the Yemeni Shura Council, the National Information Center, June 2005, p. 30.

this area is the Yemeni government's intention to prepare a draft law to combat cyber crimes with the objective of controlling crimes associated with the scientific advance in the field of informatics. The National Information Center presented a "draft of information law" that guarantees the right of access to information and greater transparency and protects privacy. It is being currently studied in the Legislative Council.

D. COUNTERING MISUSE OF ICTS

Up till now, there are no legislation governing the use of IT and confronting its misuse. Among the most important trends in this area is the Yemeni government's intention to prepare a draft law to combat cyber crimes. So far there is no accreditation body for electronic transactions. This justifies the approach announced by the Ministry of Telecommunications and IT, which aims at creating a commission to deal with this activity.

VI. ENABLING ENVIRONMENT

A. LEGAL AND REGULATORY ENVIRONMENT

The legislative and legal environment governing the ICT in Yemen is currently insufficient to activate the role of the sector, but there is a serious effort by the government towards its reform and development. In the framework of preparing supportive and transparent environment, the draft law on ICT was prepared. The government presented it to the Parliament, which in turn, referred it to a special committee to study it in February 2009[53] before its adoption. The new law[54] was prepared by the Ministry of Telecommunications and IT with the participation of one of the experts of the International Telecommunication Union.

The National Center of Information prepared the "draft information law ", which was approved by the Council of Ministers and forwarded to the Parliament under resolution No. 431 for the year 2008. In February 2009, the Parliament referred the draft law to the appropriate Committee for study. This draft law can be found on the website of the National Information Center.[55] The Ministry of Telecommunications and IT also prepared a list that regulates the cost of using frequencies and radio equipment and it also prepared a national plan for the allocation of frequencies in the international regulations with the objective to invest and manage their use in the Republic of Yemen. During the year 2008, the list for regulating communication centers, clubs and Internet cafes was also issued.[56] Copies of these regulations had been circulated on communication centers, clubs and Internet cafes. In general, the current available legislations are limited to a few, such as:

- In 1991 the Communications Act. Some of its articles were amended in 1996;
- Statistics Act No. 28 for the year 1995;
- Documents Law No. 21 for the year 2002;
- Intellectual Property Rights Act No. 19 for the year 1994;
- Republican Decree No. 155 for the year 1995 and its amendments, covering the establishment and organization of the National Information Center.

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[53] Yemen Parliament, http://www.yemenparliament.com/det.php?sid=735

[54] The Yemeni news agency Saba, http://www.sabanews.net/ar/news176619.htm

[55] http://www.yemen-nic.info

[56] Executive Report of the Government 2007.

B. DOMAIN NAME MANAGEMENT

There is still no standard or legislation for the management and organization of domain names in Yemen. However, the Ministry of Telecommunications and IT intends to create an entity to take care of this issue.

C. STANDARDIZATION IN ICT

The process of standardizing in the ICT field is a crucial function which did not receive adequate attention by the concerned authorities. What has been accomplished in this respect was the Ministry of Telecommunications and IT's preparation of a list that regulates the cost of using frequencies and radio equipment and the preparation of a national plan[57]for the allocation of frequencies in the international regulations with the objective of investing in it and managing its use in the Republic of Yemen.

D. SUPPORTING MEASURES

It can be said that there is a trend towards improving the legislative and legal environment governing the field of information and telecommunications in Yemen. That is reflected in the draft laws which have been submitted to the Legislative Council to be studied the most important of which is the draft law of ICT, and the information draft law. The two laws provide the basis for the preparation of regulations and manuals governing the management of information in government institutions.

With regard to the rest of the supportive measures that are supposed to be found in the framework of promoting the information society, it can be said that it is non-existent or still in its infancy and that it requires more efforts by all partners and a common vision that enables the strengthening of their trend towards building the information society.

VII. ICT APPLICATIONS

All available means of communication and electronic applications are used across all Iraqi ministries to improve the performance of different employees and to raise the productivity and interaction with other mutual bodies within the Government. At the Ministry of Labor and Social Affairs, for example, several systems are being applied in the departments of the Ministry such as the salary payment system, the subscription system, the services system; in addition to that the ministry is connected to the Internet via wireless broadband (WBB) system which is specifically used for the e-government project.

A. E-GOVERNMENT[58]

Since the announcing of the e-government initiative and the opening of its website in 2003, the initiative came to a stand - still, due to lack of readiness of an environment conducive to this transformation. Most of the agencies and institutions are still below the required standard. The majority of information systems available to the authorities lack the technical component compatibility, which reflects negatively on the possibility of networking with each other. Finally, a website for the government was launched, through which it will be possible to publish information relating to the activities of various Government agencies.

B. E-BUSINESS

Since the application of informatics in Yemen is still new, and due to the lack of legal provisions governing this aspect, e-commerce is almost non-existent. Yemeni banks have their websites and use some

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[57] Yemeni news agency SABA, http://www.sabanews.net/ar/news154536.htm

[58] e-Government, specificity of Yemen.

electronic payment systems on a limited scale. However, it is not possible to estimate the size of e-commerce in Yemen. Except for the results of a survey carried out in 2005, which indicates that the volume of e-commerce is only about 5.12 per cent[59]of the total services benefiting from the Internet.

C. E-LEARNING

Yemen entered the field of e-learning on a limited scale. The General Telecommunications Institute collaborated with Jordan Telecom to provide services in distance education. Since 2005, a number of educational institutions also conduct ICDL examinations over the Internet. Since 2003, a branch of the CISCO Academy works in Yemen.[60] Yemen is listed within the Fast Track Initiative for the Development of Education which was provided by the World Bank in 2004.[61] There are currently 605 schools equipped with computers and Internet service was introduced to 55 per cent of the Republic's schools. During the year 2007, a computer course was introduced in secondary education, and 200 thousand copies of the computer course book were distributed. In addition to that, 500 schools were provided with computer labs, and 233 receivers and projectors were distributed to schools for learning resources, and 3,000[62] copies of the technical manual for learning resources centers were printed and distributed. The project (INTALEQ)[63] teaching online first grade secondary school students science and math in 20 Schools, was implemented starting from February 2009.

A number of ICT specialized colleges offer their students the Internet access to learning resources. Other than that, there are no applications in e-learning. During the year 2007, the IT Center has been established in the Ministry of Higher Education as part of a program to build an IT institution in order to link Yemeni universities to a single information network.

D. E-HEALTH

There are some electronic applications used to monitor and control the spread of infectious diseases at the Ministry of Public Health and Population. Despite the existence of a number of health institutions websites, that is accompanied by a scarcity in published medical information whilst no other electronic services are available.

E. E-EMPLOYMENT

Currently there is no e-employment in its strict sense. The Ministry of Civil Service and Insurance in addition to other systems for the management of human resources uses computerized systems in the process of differentiation among candidates to apply for government jobs. A number of websites of some companies advertise their job vacancies, but they do not complete the recruitment procedures electronically.

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

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

Information technology is not sufficiently harnessed and used to disseminate and provide information about the history and culture of Yemen. In the last two years, websites in Yemen have seen a noticeable increase in their numbers to become 915.[64] Yet only a fraction provides historical and cultural information at

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[59] Indeed, assessment of the current Information of the Republic of Yemen, the National information Center.

[60] http://www.yca.edu.ye/cisco.aspx

[61] Plan of economic and social development (2006-2010).

[62] Executive Report of the Government 2007.

[63] the Yemeni news agency Saba, op, http://www.sabanews.net/ar/news169652.htm

[64] http://www.mtit.gov.ye/index.php?q=news_d&id=329

a rate not exceeding 12 per cent of the total materials published in various locations. At the same time, Arabic is adopted as the language for publishing at a ratio of up to 80 per cent and the remainder is allocated for publications in other languages (English and French). In December 2008 the e-directory service was launched in the Information Unit at the National Museum in Sana'a. It displays the contents of the museum through the electronic display screens. The National Information Center is also adopting an initiative for the compilation of studies and research of Yemen, entering it on computers and saving it for easy access by stakeholders.

B. LOCAL AND NATIONAL DIGITAL CONTENT DEVELOPMENT

Recent trends of the Yemeni institutions to automate their works have contributed to improving the chances of development of the digital content at the institutional level. This led to the emergence of new content on the websites of these institutions. This trend is also considered one of the concerns of the local authorities and highlights the success of the governorate of Hadhramaut in its move to the use of web applications[65] for the conducting of its work. The Ministry of Local Administration is implementing a networking project for the information system of the local authority which includes all governorates. The project includes systems and data software regarding developmental projects, local resources, demographic and geographic information system, and others.

The National Information Center is mainly concerned with the issues of developing and expanding of the information in Yemen and making it accessible for the beneficiaries, including interested parties, decision-makers, investors, and researchers. It also provides this content to various public and private institutions and other interested parties. Currently the Center receives information and various reports from many sources, including various state institutions. The Center role is to study, analyze, and produce information, along with the task of converting the information received into digital format and re-organizing it in the form of automated and specialized systems. In addition to that, the Center has a wide range of information as well as an internal electronic library containing more than 10,000 e-books in various fields.

C. ICT TOOLS AND R&D PROGRAMS

In 2002, the Ministry of Telecommunications and IT inaugurated the first phase of the ICT city. The Center of Software Industry and Development is one of its components. It was established to support the Yemeni market with what it needs for the development of IT[66]. The completion of Phase II of the ICT City in Sana'a will take place in 2009. This will be achieved through the establishment of new components and the establishment of another city in Aden. The Ministry of Telecommunications and IT is preparing a study[67] to establish a Technology Development Fund. The aim of the fund is to encourage qualified personnel with specialized skills and help them transfer their innovative ideas into a product with economic return on condition that it must be supported by mobile telephone operators. The fund also aims at working on integrating systems and software, and standardizing the database necessary to automate most of the work of the ministry and its corporation and its branches in all governorates.

IX. MEDIA

A. MEDIA INDEPENDENCE AND PLURALISM

The media in Yemen varies between readable, audible and visible. The radio and the television are owned by the State. Yemen today owns a full satellite group, which was opened in March 2008 with a capacity of 34 MHz with energy compatible with the satellite "Badr-4". Newspapers are classified according

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[65] http://www.hadhramaut.info

[66] Can't say that it has achieved apparent success only in the rehabilitation of the human cadre.

[67] The Yemeni news agency Saba.

to their founders such as:[68] official newspapers, parties' newspapers, civil or independent newspapers, newspapers of mass organizations, ministries newspapers and newspapers of civil society organizations. A number of official and parties' newspapers are published through their websites. It could be argued that the media is working fairly well in the diversifying sources and portraying social diversity.

B. THE MEDIA AND ITS ROLE IN THE INFORMATION SOCIETY

The audio-visual media (television, radio) is dedicating for scientific and educational programs a small percentage of no more than 10 per cent of its total transmission hours. Printed media serves better raising awareness than the audio-visual media. However, all different media are still not playing the expected role in raising awareness concerning the Yemeni Information Society.

X. INTERNATIONAL AND REGIONAL COOPERATION

A. FINANCING OF ICT NETWORKS AND SERVICES

International and regional cooperation with Yemen with respect to ICT funding is currently limited. In this regard, reference can be made to the E-Directory Service Project[69] and the Information Unit at the National Museum, which was offered by the Japanese government, the preparation of which has been recently completed. The project[70] for online teaching mathematics and science for first grade secondary students over the Internet in 20 Schools was funded by donors and the private sector.

With regard to investment and despite the facilities offered by the State, investment is still below target. This is because the investment environment is still facing some difficulties in becoming stable, secure, and attractive to investors despite the available legislation that can be considered one of the best legislations in the Arab world.

B. INFRASTRUCTURE DEVELOPMENT PROJECTS

TABLE 3 - INFRASTRUCTURE DEVELOPMENT PROJECTS AND ITS IMPLEMENTATION STATUS

P	Project	The side concerned with implementation	In progress	Proposed for implementation	Funding Source
1	The President of the Republic project for the dissemination of computers	Ministry of Communications and Information Technology	Under implementation since 2002		Local
2	National Information Network project	The National Information Center	Under implementation since 2001		Local up to date
3	Project to build a container of spatial data	Ministry of Communications and Information Technology	Under implementation since 2006		Local
4	Comprehensive Geographic Information System	The National Information Center	Under implementation		Local
5	The digital map project	Central Bureau of Statistics	Under implementation since 2006		Local
6	Community Service Centers	The National Information		Proposed for	

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[68] freedom of information and access to from the perspective of civil society, media, d. Albraihi Ali, Professor of Information and Communication Faculty of Information University of Sana'a, p. 8-9.

[69] Yemeni news agency SABA, http://www.sabanews.net/ar/news171737.htm

[70] Yemeni news agency SABA, http://www.sabanews.net/ar/news169652.htm

	Project	Center		implementation since 2006	
7	Completing the second phase of the ICT city project	Ministry of Communications and Information Technology	Under implementation since 2005		Local
8	Yemen E-library project	The National Information Center		Proposed for implementation since 2006	
9	Project for the development of a transmission network through the completion of the paths of fiber optic cables	Ministry of Communications and Information Technology	Under implementation since 2006		Local
10	Networking project of the Center for Information Technology	Ministry of Higher Education and Scientific Research	Under implementation since 2005		Local and external
11	Tourist Information Center, Ministry of Tourism	The Ministry of Tourism	Under implementation since 2007		Local
12	Project of Information and Communications system for the ministry of information	The Ministry of Information	Under implementation since 2008		Local
13	Information Network project of the Ministry of Local Administration	Ministry of Local Administration	Under implementation since 2007		Local and external
14	Project of Technology Development Fund (TDF)		Under implementation since 2007		Local

In all of the above projects, there is an essential need to encourage these initiatives and projects and support them to accelerate the pace of implementation. That is due to poor funding, that is why Yemeni institutions are putting great efforts to enhance cooperation with international partners and donors.

C. WSIS FOLLOW-UP

With the cooperation with ESCWA, the final revisions of the policy and strategies' documents have been completed, these include: the national policy of information, the national strategy of information, and the operational framework for the national strategy. These documents, after being approved, they may contribute to the compatibility of these policies and strategies with the regional plan of action for building the information society.

XI. MILLENNIUM DEVELOPMENT GOALS

A. PROGRESS TOWARD ACHIEVING THE MDGs

The 2006-2010 economic and social development plan of the State of Yemen was based on the 2015 millennium development goals as one of its main principles to achieve its objectives. The targets and specific stages of the plan were laid down in a way that is consistent with the target objectives of MDGs. The level of progress made towards achieving the MDGs in Yemen is shown in the following schedule:

Millennium Dev. Goal	Indicator	Value	Year
1 - The goal of eradicating extreme poverty and hunger	Overall poverty	35.5%	2005
	Intensity of poverty	5.0%	2005
	The percentage of people living below the food poverty line	14.5%	2005
	Poverty gap ratio	11.3%	2005
2 - The goal of enhancing elementary education	Gross enrollment ratio in primary education for both sexes	75%	2007
	Gross enrollment ratio in primary education for males	84.81%	2007
	Gross enrollment ratio in primary education for females	64.5%	2007
3 - The goal of promoting gender equality and empower women	Female to male ratio in primary education	41.5%	2007
	Female to male ratio in secondary education	33.5%	2007
	The proportion of females to males in higher education	28%	2005
	The proportion of seats held by women in the House of Representatives (parliament)	0.33%	2005
4 - The goal of reducing child mortality	The proportion of children who die under the age of five per thousand live births	78%	2007
	The proportion of infants who die before reaching one year of age out of every thousand live births	68%	2007
	The proportion of children immunized against measles, aged one year	90%	2007
5 - The goal of improving maternal health	Cases of women who face death at birth per hundred thousand live births	366	2007
	The proportion of births taking place under the supervision of health staff.	35.7%	2006
6 - The goal of combating HIV / AIDS, malaria and tuberculosis and other diseases	The rate of immunization against the six diseases	87%	2007
	Cases of malaria	48%	2007
	The number of people living with HIV (AIDS) in the society	1882	2007
	Infected TB cases per hundred thousand of the population	16.1	2004
7 - The goal of ensuring environmental sustainability	The proportion of the urban population with sustainable access to a good source of drinking water	73.7%	2004
	The proportion of the rural population with sustainable access to a good source of drinking water	27.9%	2004
	Proportion of population in urban communities who connect their homes to sewerage networks	82.8%	2004
8 - The goal of establishing a global partnership for development	The number of fixed and mobile telephone lines per hundred persons of population 2007	26.4	2007
	The number of computers used for each one hundred persons of population 2007	1.8	2007
	The number of Internet users per hundred persons of population 2007	4.4	2007

B. USE OF ICT FOR ACHIEVING THE MDGs

In 2003, the Government in coordination with the World Food Organization carried out a survey for the maps and information system related to food insecurity in Yemen.[72] The 3rd Five-Year Plan (2006-2010) approved a number of ICT projects to achieve the MDGs. Among these is highlighting the importance of

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[71] based on statistics and percentages contained in this section on what the "plan of economic and social development of the third Poverty Reduction (2006-2010), Book of ICT in Yemen; Executive report to the Government of 2007, the Ministry of Public Health and Population Annual Statistical Health Report 2007.

[72] Plan of economic and social development (2006-2010).

ICT in human development and promoting its use in rural development, alleviating poverty, and in education and health.

XII. BUILDING THE ICT SECTOR

A. ICT FIRMS

The private sector in Yemen is a key partner in the provision of telecommunications services. Its role expanded after the granting of three concessions for the operation of three mobile telephone networks to three private sector companies, SabaFon in 2000,[73] MTN in 2001,[74] and HiTs-Unitel[75] (Y) in 2007. While a fourth company (Yemen Mobile[76]) has been working since 2004. The private sector also runs centers of telecommunications services and Internet cafes. The Government is also working on encouraging the private sector to establish training and specialized rehabilitation centers in the area of IT, which in early 2007, exceeded 187 Training Centers.

There is no infrastructure in Yemen for an up to the standard software industry. The infrastructure available now is limited on the hardware, software, telecommunications, and Internet. Legal frameworks governing and encouraging the development of this industry are non-existent. As far as hardware industry is concerned, the activity is limited to selling imported goods and there are no local companies working on the development of computer hardware or accessories.

B. R&D AND INVESTMENTS IN THE ICT SECTOR

In ICT research and development, the Ministry of Telecommunications and IT is preparing a study[77] to establish the Communications Technology Development Fund. It will encourage qualified people with talent, and help them transfer their innovative ideas into a product with an economic return. During 2009, the second phase of the ICT city will be completed. Despite the improved investment environment in Yemen and the entry of many investment companies in several areas, investment in the ICT sector is still below target.

One of the current investments in the ICT sector is the expanding and developing of the production line that was established in 2006 as a national holding company for the production of computers, which amounts to an annual output capacity of 160,000 desktop computers, and 1000 portable computer. This is one of the components of the second phase of the ICT city inaugurated by the President in June 2006. Added to that are, the investments made by the Public Telecommunications Corporation to expand and develop its services.

C. CONTRIBUTION OF ICT SECTOR IN THE NATIONAL ECONOMY

The ICT industry plays a major role in the economic development and it is considered the backbone of any sound and prosperous economy. In Yemen, up till now there is no real IT industry that can be said to have an effective contribution to the national economy. Also accurate information about the volume of expenditure in the field of informatics is not available, but according to the 2001survey it was estimated at 63.14 million dollars. During the year 2007, the total expenditure on development projects, programs, and post was 96.390 million dollars. With regard to the sector's revenues, the State Treasury was supplemented with 74.365 million dollars, representing the formal institutions revenue in 2007.[78] There are no statistics

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[73] http://www.sabafon.com

[74] http://www.mtn.com.ye

[75] http://www.y-gsm.com

[76] http://www.yemenmobile.com.ye

[77] Yemen news agency Saba, op.

[78] Op.

records to show the income of the rest of the ICT working sectors in Yemen. The ICT sector's working force is about 29,000 workers representing a small percentage of the total workforce in Yemen.

D. GOVERNMENT FACILITATION

The Yemeni government is seeking to develop the policies and procedures that ensure the provision of advanced infrastructure and legislations in ICT, most important of which are strengthening the role of the private sector and stimulating private investment. To encourage small industries, the Government provides financial loans through funds. However, there are no drawn procedures or implementation controls to support the different types of institutions' adoption of technological solutions. Under the law of investment, there are facilities for those who wish to establish investment projects in any sector, but the absence of IT regulatory frameworks is an impediment to active participation.

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