UN-ESCWA
United Nations Economic and Social Commission for Western Asia

Iraq National Digital Development Review Report

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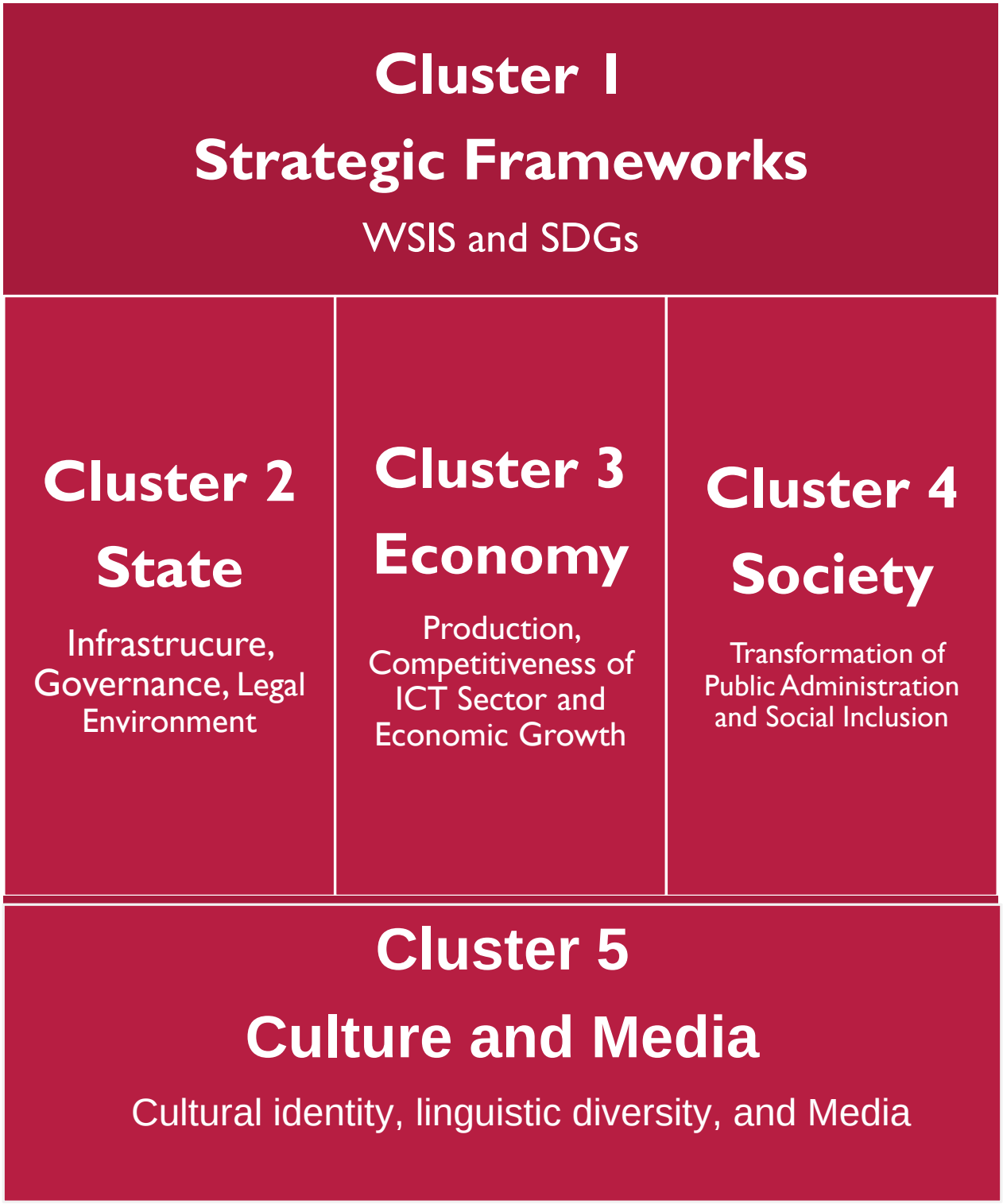
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I. Cluster One: National, Regional and International Strategic Frameworks

A. National digital strategies (The role of the government and all stakeholders (C1))

Overarching National Digital Strategy exists (like Digital Nation, Smart Nation, Digital Economy…etc.)	*Yes*
Name of the Strategy	Du_3M initiative[1]
Year of adoption and latest update	*2018*
Government agency in charge	Communications and Media Commissions (CMC)
Pace of implementation	*Good*
Description of progress made (about 150 words)	Du_3M initiative is a strategic initiative in the Telecommunication and Information Technology sector with a number of essential objectives and targets to be achieved. The word "Du" means "building" in the Sumerian language and the letter "M" from the word means "future" in Arabic, both together mean “building the future”. This initiative was developed and launched established by the Communications and Media Commission of Iraq according to a decision by the Council of Ministers. Du_3M initiative aims to accomplish 9 projects, as stated below: • The electronic government. • Launching 4G and (LTE and LTE-Advanced) and 5G services. • Cyber security, digital content, data centre and application license. • Telecom infrastructure sharing. • e-Waste. • Clean energy use. • Universal Access. • IXP and big data management. • Teleport Service.
Sectoral (ICT):	*Yes*
ICT Sector strategy / plan exists	
Name of the strategy / plan	Iraq Telecommunications Policy and Strategic Roadmap
Year of adoption and latest update	*2011*
Government agency in charge	*Ministry of Communications (MOC)* *وزارة الاتصالات*
Pace of implementation	*Good*
Description of progress made (about 150 words)	The Telecommunications Policy and Strategic Roadmap covers a wide range of subjects. This includes the policy debate, the role

[1] https://www.ina.iq/79843--.html

	of government, competition policy, and promoting IPTC as a sustainable business. The Telecommunications Policy and Strategic Roadmap based in part on international trends, best practices, and Iraq market dynamics. It also identifies institutional implications and plans an implementation process - as needed - to achieve the desired targets and the sector's objectives. It reflects the outlook of the broader information and communication technology (ICT) sector in Iraq.
Other Sectors:	*Yes*
Digital Transformation strategy / plan exists (Digital Learning / Digital Health…etc. *(Repeat this section – 5 rows – as required)*	
Name of the strategy /Plan	*National Strategy and Action Plan: Information and Communication Technology for the e-health sector*
Year of adoption and latest update	*2011*
Government agency in charge	*Ministry of Health* *وزارة الصحة*
Pace of implementation	*Average*
Description of progress made (about 150 words)	The Strategy adopts the following initiatives: - Conducting prevention and awareness campaigns using communications and information systems in health centres - Establishing databases for integrated medicines. - Connecting the Ministry of Health with the central health departments in the governorates - Providing remote medical and health consultations by telephone
Name of the strategy /Plan	*Strategic Axes and Programs for e-government*
Year of adoption and latest update	*2016*
Government agency in charge	*General Secretariat of the Council of Ministers* *الأمانة العامة لمجلس الوزراء*
Pace of implementation	*Good*
Description of progress made (about 150 words)	Strategic axes and programs for e-government consist of: - The first axis is infrastructure - The second axis is basic electronic applications and services - The third axis is standards and legal framework - The fourth axis is Institutional and administrative development of e-government

B. National Engagement in International and Regional Cooperation Initiatives (C11)

1. WSIS Follow-up

The CMC has become a member of the Governmental Policy Advisory Committee (GAC). There has been joint technical cooperation and policy development. As mentioned, The CMC adopted the Du3M initiative as a strategic national initiative in the ICT sector with a number of essential objectives and targets to be achieved, which are matching with a number of the WSIS goals:

- Recognizing the critical role of the ICT sector as a key enabler for social, economic and environmentally sustainable development.
- Fostering digital economy and society transformation.
- Strengthening cooperation and engagement among the stakeholders.
- Supporting the investment resources and fulfilling the even investing competition
- Embracing the transparency at work of the ICT sector.
- Offering real partnership opportunities between the governmental and private entities.
- Empowering the individuals especially the disabled people and those who live in the rural/suburb regions to have access to high-level ICT services and applications.
- Offering job opportunities for the youth population and a conductive environment that encourages skills and intellectual abilities development.
- promoting the ICT rank of Iraq regionally and internationally.

2. Other related Frameworks (other than WSIS)

Iraq participated in the Arab Internet Governance Forum held in 2013 and 2014, where the CMC made great efforts in conjunction with the Ministry of Communications to promote awareness about the Arabic domain names. As a result, Iraq succeeded in meeting all the conditions set by ICANN in this regard and the Arabic domain name was assigned to Iraq under the name of (عراق.).
Also, under the umbrella of the International Telecommunication Union (ITU), Iraq managed to get international support to issue crucial international resolutions by both the Plenipotentiary Conference (ITU-PP) 2018 and the World Telecommunication Development Conference (ITU-WTDC) 2010, as shown below:

- ITU-WTDC RESOLUTION 51 (Provision of assistance and support to Iraq to rebuild and re-equip its public telecommunication systems)
- ITU-PP RESOLUTION 211 (Support for the Iraqi Du3M 2025 initiative for advancement of the telecommunication and information technology sectors)

II. Cluster Two: Infrastructure, Governance and Legal Environment Policy Areas

A. ICT Infrastructure (C2)

1. Market structure and regulatory landscape

The Ministry of Communications of Iraq (MOC) is the federal government ministry concerned with providing basic telecommunications services to the public, government entities, and businesses. The MOC also provides postal service and manages postal savings accounts.

The MOC govern the following state-owned companies:

- **Information and Telecommunication Public Company (ITPC)**: it is a state-owned company responsible of providing Information and telecommunication services.
- The ITPC is responsible for the fiber optic network, the microwave backbone and limited Fixed Wireless Local Loop (WLL) CDMA network. On the other hand, the State Company for Internet Services (SCIS) is handling the internet subscribers and internet communication in Iraq providing wireless internet access for government agencies, DSL and Dial up VOIP services and internet protocol (IP) address registration.
- **Al Salam Company**: It is a company provides security solutions including video monitoring, alarm systems and communications.
- **State Company for Post and Savings:** The Company provides postal, financial and banking services to government agencies and citizens inside and outside Iraq.

The Commission of Media and Communications (CMC) in Iraq is an independent authority, that does not associate to any other governmental entity, aims to regulate and develop the media and telecommunications sectors in Iraq according to the modern international criteria. this includes regulating broadcasting and communications networks and services, including licensing, pricing, interconnection, as well as identifying the basic conditions for the provision of pertinent public services. It also plans, coordinates, distributes and identifies the use of broadcasting frequencies.

Mobile operators: The three mobile network operators which hold national licenses are Zain Iraq, Asiacell and Kork Telecom. The most popular mobile plans are pre-paid and mobile broadband services,

Iraqi ISP: The most known ISPs in Iraq are: FastIra, Aljazeera, TigrisNet, Earthlink, Scope Sky, Alsared fiber, IQ Networks, ITC, Alhayat and Orient.

Telecom Service	Status of regulatory landscape	List all awarded telecom licenses
Mobile services	*Competitive*	Asiacell, Korek Telecom and Zain
Internet services	*Competitive*	FastIra, Aljazeera, TigrisNet, Earthlink, Scope Sky, Alsared fiber, IQ Networks, ITC, Alhayat and Orient

2. ICT Infrastructure by Service Type

The infrastructure in Iraq, including ICT infrastructure and facilities have deteriorated due to the 1991 Gulf War and consecutive economic sanctions and conflicts. After the Iraq War in 2003, the backbone network has been rehabilitated to accommodate the increasing demand on voice and data services, and a remarkable progress has been made with regard to the improvement of backbone and local access network. The communications sector has been given a high priority due to its crucial role as a key for economic growth an development and for human prosperity. A plan that is adopted by MOC aims to bring the Iraqi communication services closer to international standard through the different Public-Private Partnership (PPP) arrangements/types. The main objectives of this plan include expanding fixed telephone lines in the urban and rural areas, improving the quality of communications and internet services, expanding the use of broadband services at affordable prices, among others.

Types of Internet services:

- Wi-Fi Towers: This service has been deployed widely in most areas of Iraq, where the internet service is provided to houses through antennas that are placed on the top of the buildings' roof.
- DSL service: This service has been deployed in many switches in Baghdad and other provinces. However, the required level of deployment has not been achieved due to the problems associated with the copper cable network that suffers wars and military actions that Iraq has passed through.

- Fiber to the Home (FTTH) services: The FTTH projects are used in the deployment of broadband service because of its ability to provide internet service at high rates to meet the broadband band requirements. The FTTH services that have been implemented during the recent years, with a capacity of 650 thousand lines, cover all governorates of Iraq.
- 3G license for mobile operators: licenses were granted to mobile operators in Iraq for the use of 3G technology for mobile connectivity, where licensed mobile operators started to provide broadband Internet services on 1/1/2015.
- LTE Fixed: The ITPC implemented the LTE fixed network for e-Government services.
- The deployment of CDMA technology within the national network where 348 thousand lines are distributed in Baghdad and a number of provinces.

A. Current Status of ICT Infrastructure in Iraq:

- **Local Access Network**: MOC/ITPC has invested in numerous FTTH projects, listed in table below, inside and outside the capital Baghdad:

No.	Target Area	Subscribers	Access Technology	Commencement of Project
1	Baghdad,	80,000	MSAN/FTTC	2009
2	Baghdad, Basrah, Missan, Kut, Najaf, Ninawah	45,000	FTTH/FTTB	2010
3	Baghdad, Diyala & Ramadi	185,000	FTTH/FTTB	2011
4	Baghdad, Kirkuk, Babil, Salaheldien, Qadsiya	56,000	FTTH/FTTB	2012
5	Baghdad, Kerbala, Salaheldien, Muthana, Basrah, Missan, Kut, Najaf, Ninawah	85,000	FTTH/FTTB	2013

- **Dense Wavelength Division Multiplexing (DWDM) Network:** The DWDM network in Iraq, with its length of 9,000 km nationwide of fiber optic cable, operates as the main backbone network. The nationwide fiber optic transmission network was initially comprising the topology of 7 DWDM rings. The DWDM transmission network was later expanded by adding Automatically Switched Optical Network (ASON) to 51 sites. Apart from the nationwide backbone network, metropolitan DWDN network is operating in Baghdad in a way similar to the nationwide backbone network.

- **PDN Network:** PDN is a packet data network constructed over DWDM transport network for IP packet data traffic. Existing PDN core network is working with MPLS protocol and consist of 2 core sites with CRS-16 in Baghdad and 7 core sites with CSR-1 in Baghdad, Mosul, Kirkuk, Basrah, Nasrrya and Diwania. PDN network in Baghdad is composed of 46 edge routers. Those core and edge routers have currently limited slots, switching capacities and interfaces, and need to be upgraded in addition to DWDM transport network.

- **International Gateway (IGW)**: There are two types of IGW in Iraq, one is IGW for voice traffic and the other is for data use. The IGW for voice. was implemented by ITPC and is being used for international fixed voice communication as well as for the mobile communication by several mobile operators in Iraq. On the other hand, IGW for data was implemented by Al Salam Company and is mainly used for internet services.

Indicator	Value	Latest Year
Mobile phone penetration	92.81%	2017
Percentage of households with Internet access	58.8 %	2017
International Internet bandwidth (bit/s) per Internet user	970'931.2 mbps	2017
Percentage of the population covered by mobile networks		
- At least 3G	85.59%	2017
- At least LTE/WiMAX	-	-
Fixed-broadband subscriptions by speed tiers as a % of total fixed-broadband subscriptions		
- 256 Kbit/s to 2 Mbit/s	30%	2017
- 2 to 10 Mbit/s	60%	2017
- 10 Mbit/s or more	10%	2017

B. **The New Projects Outlines**:

- **Package1: Enhancement of nationwide DWDM backbone network:** This package is to enhance nationwide DWDM backbone network which would cover entire regions of Iraq. To cope with future traffic demand, nationwide DWDM transmission capacity is to be upgraded to 400Gbps or more in this package.

- **Package2: Enhancement of Metropolitan DWDM network in Baghdad: This** aims to enhance Metropolitan DWDM network inside the capital of Baghdad. Similar to Package1, DWDM transmission capacity would be expanded to 400Gbps or more and full ASON mesh topology would be introduced in the Metropolitan DWDM.

- **Package3: Upgrade of IP-PDN network:** This package will cover upgrading the nationwide and Baghdad IP-PDN networks. As all internet traffics stream through IP-PDN over DWDM transport network, the upgrade of IP-PDN networks to increase the bandwidth of interconnecting links of core-to-core and core-to-edge.

- **Package4: Integration and upgrade of International Gateway (IGW):** The scope of Package 4 would be limited to the development of the gateway itself with the equipment of a duplex transmission facility, international transit switches and their network control equipment placed in the gateway.

- **Package5: Expansion of IP Multimedia Subsystem (IMS) and billing system:** This package is to expand IMS & Charging & Billing in One (CBiO) system's capacity and functionality. An IMS is a core equipment to control an integrated voice and data traffic/signaling over IP. A billing system is one of vital elements of telecommunication infrastructure. It functions to receive call detail and service usage information in order to: determine the billing rates associated with the billing records, group this information for specific accounts or customers, sending invoices to the customers and collecting payments received from the customer.

- **Package6: Development of Network Operation Center (NOC):** This is to construct the NOC for the integrated network operation and management. It is a mandatory task for fixed line operator to provide secured and reliable telecommunication services to subscribers at any time.

3. ICT connectivity

Through its supervision over the private mobile operators, the Ministry of Communication ensured that the entire area of the Republic of Iraq is covered. Each Iraqi family owns at least one mobile phone, and there has been an increase in the use of smart phones. As for the internet services, access to internet in the provincial centers through ISPs is at good rates.,

4. Internet Architecture

1. **Nationwide Optical Backbone**: Currently, the ITPC backbone is divided into three parts:

- The first part is installed in mesh topology. It allows to reach 380 Gb/s for the main road and 200 Gb/s for other roads.
- The second part is installed in ring topology. It allows reaching speed of 20Gb/s and will be upgraded to 200 Gb/s.
- The third part is installed inside Baghdad using DWDM metro network solution. It allows speeds of 80 Gb/s and will be upgraded to 200 Gb/s.
- The Microwave network: In addition to the fiber optic backbone, a microwave backbone is available in Iraq. It links Baghdad's east to west and north to south. It uses the following band:
  - 7 GHz Band on 7+1 and 15+1 configuration.
  - 43 Microwave links are working in Baghdad using 13 GHz.
  - Other links using 23 and 27 GHz band.

2. **The Fiber Optic Submarine cable**:

-The Fiber Optic Link Around the Globe (FLAG) cable system is a 10 Gb/s synchronous digital hierarchy (SDH)-based undersea fiber optic network. In Iraq, the FLAG cable provides a total capacity of up to 444 STMI.

- The Gulf Bridge International (GBI) is the Middle East's first privately owned submarine fiber-optic infrastructure provider[2]. GBI landed in Al Faw the first subsea cable providing connectivity to Iraq. GBI also deployed the first ever terrestrial cable connecting all the countries of the Gulf to Europe. The new GBI North Route provides connectivity from the cable landing station at Al Faw, in the south of Iraq, crossing Iraq and Turkey to Istanbul, and onward to Frankfurt in Germany[3].. The GBI cable provides a total capacity of up to 144 STM-1[4].

-In addition, Iraq now is connected with all six neighboring countries via fiber optic cable (Turkey, Syria, Saudi, Jordan, Kuwait and Iran).

3. **Internet Services Provider:** There are many ISPs in Iraq. The strong competition among those ISPs works in favor of the improvement of the quality of the services to both government institutions and the private sector, and also help reducing subscription fees (service price reduction). Internet services in Iraq can be summarized as follows:

- Private sector ISPs offer internet services to all the ministries, government institutions in addition to private entities and to the civil society organization.
- Internet services for homes are also provided through the Wi-Fi, FTTH, DSL and 3G mobile technologies;
- Parts of the areas belonging to ministries and universities have free internet services through Wi-Fi;

[2] https://www.submarinenetworks.com/systems/asia-europe-africa/gbi/gbi-lands-first-ever-subsea-cable-in-iraq

[3] https://www.submarinenetworks.com/en/systems/asia-europe-africa/gbi/gbi-reaches-europe-through-terrestrial-routes-via-iraq-and-turkey

[4] https://itig-iraq.iq/wp-content/uploads/2019/05/Iraq-Submarine-cables-article-v2.pdf

- The conference and meeting rooms in the government institutions are equipped with audio-visual conferencing tools operating through fast wireless internet;
- Some of the government institutes (universities and research centers) have adopted IPv6 addresses.
- There are many servers within the government institutions which offer computer services for the institution itself, and there are servers which provide these services to other ministries as well;

5. Domain name management and adoption

The Communication and Media Commission (CMC) is the entity manages the ccTLD (.iq) and other TLDs such as .gov and .edu, among others. A circular was issued bythe Cabinet to all public sector institutions ordering them to register with the CMC for both levels of domain names; ccTLD and other TLDs such as .gov and .edu. Several forums were held at the CMC and at several universities to discuss the availability of Arabic URLs for these websites.

Name of ccTLD registrar	*Name in English: Communications and Media Commission* *Name in Arabic: هيئة الإعلام والاتصالات*
URL of registrar	*http://www.cmc.iq*
Total Number of ccTLDs registered in the country for the years 2015, 2016, and 2017.	*2015: 1082* *2016: 929* *2017: 1113*

B. Governance (C1 and C11)

1. Public/Private Partnership (PPP), Multi-Sector Partnership (MSP) and Role of Non-Governmental Organizations

Iraq has a large ICT market that provides the private sector with the opportunity to participate in the establishment, construction and maintenance of projects related to the communications sector. In this regard, About 40 partnership contracts were signed between public companies (affiliated to the Ministry of Communications) and private sector companies to set up and manage various projects.

There are telecommunications and information companies licensed to work within the private sector and with projects of different values and varied benefits for the local market.

A considerable portion of ICT services in Iraq are provided by the private sector, such as mobile network services, Internet services, e-learning programs, e-management, and control system for the oil sector. In addition, there are examples of partnerships between the Ministry of Communications and private companies aiming at building the capacities of the Ministry's staff.

The contribution of NGOs in developing the ICT sector in Iraq could be summarized as follows:

- KOICA (Korea International Cooperation Agency) provided training to government employees from several ministries on various uses of ICT in addition to providing modern electronic devices such as computers, routers, and interactive training equipment.
- UNESCWA offered training to tens of government employees in IT curricula in collaboration with several international companies.

- The World Bank also enrolled the Iraqi universities in the University Governance and Quality Assurance project of which ICT is one of the main pillars.
- JICA (Japan International Cooperation Agency) had implemented the "Communications Network Development Project for Major Cities" according to which the Government of Iraq received a loan from JICA to support the funding of improving of the country's ICT capabilities through developing IP communication systems and local access networks in major cities.

2. Participation in Internet Governance activities

Iraqi Delegations participated in several Internet Governance Forum (IGF) activities to build knowledge and skills that will facilitate their participation in existing Internet governance institutions and arrangements. This also is to discuss proposals including regulatory frameworks, potential risks, global trends, as well as best and worst practices that have been adopted.

C. Legal environment, ethics and building trust (C2, C5, C6 and C10)

1. Legal and regulatory environment

Investment and development in the ICT sector is protected through a legal framework that includes legislations such as the Ministry of Communications and Information Technology Law, the Media and Communication Commission law, the Communications and Information law the Iraqi investment law No. 13 in 10/10/2006 and the registration of companies' law No. 21 for year 1997. Also, Iraq enacted the e-Signature and e-Transactions law no. 78 of the year 2012. Iraq have not enacted yet legislation to regulates e-commerce and e-payment, however such activities started to be acceptable to the Iraqi society.

Cyber Laws	Available?	Law number	Year Passed
e-transactions law	*Yes*	No. 78	2012
e-signature law	*Yes*	No. 78	2012
Management of PKI available	*Yes*		

2. Privacy and Data protection

A Committee to coordinate and manage the Government activities towards the establishment of the e-government was established by Decree No. 45 of 2016. The tasks of the committee were defined as setting the general regulations and standards for the ICT sector in addition to preparing a realistic national plan that contributes to the transformation towards electronic government. This committee consists of several teams, one of these teams has a duty to develop a privacy and data protection policy, which should be adopted in the next 3 months.

3. Countering misuse and preventing abuse of ICTs

The ICT strategy included the presentation of laws and legislations for cyberspace and addressing cyber-crime in accordance with international agreements and conventions. Training centers organize training courses and awareness raising workshops on this issue, in partnership with the Ministry of the Interior, to combat electronic and cyber-crimes and to disseminate information about any possible cybersecurity threat. The draft cyber-crime law includes legal penalties for the abuse of computers, electronic devices, and computer networks.

These penalties vary between fines and prison terms. Although this law has not yet been enacted, the Ministry of the Interior has a division whose task is to monitor and control cyber-crimes such electronic fraud, pornographic content, and content that is offensive to individuals and families.

4. Use of electronic transactions and documents

The e-Signature and e-Transactions Law No. 78 of 2012 comprises twenty-nine legal articles that are organized in eight chapters as follows:

- The first chapter covers the definitions of the basic terms of the law.
- The second chapter highlights the objectives of the law and its scope of implementation.
- The third chapter identifies the regulations of s the electronic signature.
- The fourth chapter presents electronic documents.
- The fifth chapter presents electronic contracts.
- The sixth chapter deals with the provisions of electronic commercial and financial papers
- The seventh chapter is dedicated to the electronic transfer of funds.
- Finally, chapter eight includes the final provisions of the law.

Recently, two licenses were granted by SCIS for electronic authentication project to provide below services:

- Encryption of networks and electronic services.
- Signing and encrypting e-mail.
- Signed MS Word and Adobe PDF files.
- Central Authentication SSO.

5. Online and network security

Iraq developed a National Cybersecurity Strategy[5] that defines a country's readiness to protect and prepares the entire nation in advance to protect digital infrastructures and global economic competitiveness in cyberspace. It also addresses the desire to enable the nation to build comprehensive capabilities from a structural and procedural standpoint at the strategic and tactical levels in mitigating cyber risks. The critical success factor of the strategy hinges on the comprehensive mobilization, participation, and coordination of critical components to ensure our presence in cyberspace and protect critical information infrastructures. The direction of government policy on cybersecurity is consistent with the regional and global trend on securing cyberspace.

The most important focus of the cybersecurity strategy is to address the country's exposure to cyber risks, protect the national basic information infrastructure, exploit cyberspace opportunities for national security and economic goals, and work to support a trusted cyber community.

Moreover, Iraq established the Iraqi CERT to protect the Internet infrastructure and spread awareness in the field of privacy protection and self-protection for individuals and institutions on the Internet, working under the supervision of the Iraqi National Security Advisory. The team is responsible for securing and protecting the networks, national data centers and official websites that operate in the Iraqi cyberspace, coordinating national efforts and supporting institutions in the public and private sectors in protecting themselves and their services in cyberspace[6].

[5] https://www.itu.int/en/ITU-D/Cybersecurity/Documents/National_Strategies_Repository/00056_06_iraqi-cybersecurity-strategy.pdf

[6] http://www.white-hat.online/index.html

III. Cluster Three: Digital Economy, Employment and Trade Policy Areas

A. Building the ICT Sector (C12)

1. ICT Firms

There are three types of ICT firms in Iraq:

- **Public sector firms**: This includes three state-owned companies that are governed by the Ministry of Communications, which are:
    1. Information and Telecommunication Public Company,
    2. Al Salam Company.
    3. State Company for Post and Savings.
- **Private sector firms**: The private sector firms implement the majority of the communications projects in Iraq (more than 70 per cent thereof). These companies offer internet services to all governmental institutions and to the households. Regarding the economic activity, there are 3 mobile operators, Internet service providers. Also, there are many computer services companies, where some of these companies have marketing, maintenance, and guarantee licenses from international companies such as HP and Microsoft. Certain companies are specialized in the design and development of electronic systems for government agencies such as the library system, the student registration system and so on.
- **Mixed sector firms**, mixed sector companies consist of shares from public and private entities where the state's share should not be less than 25%, such as the Electronic Industries Company.

2. R and D, Innovation and Standardization in the ICT sector

Each ministry in Iraq has a directorate for Research and Development which encourages pertinent ideas and projects and supports them financially. ICT projects do constitute a large percentage of the total number of projects.

The Ministry of Higher Education and the Ministry of Education organize tournaments for students in the ICT domains, where innovative projects can be adopted on both the level of the ministry or on the national level. According to the directives of the Ministry of Higher Education, each university created a division for marketing the scientific products, which are affiliated to the university deputy chairman for scientific affairs. The mandate of these divisions is to receive the scientific production of students and professors, integrating them, and then send them to the division of product marketing in the Ministry of Higher Education to market them to both public and private sector entities.

All Iraqi universities have electronic computing centers that carry out the following tasks:

1. To provide and facilitate the use of scientific software for researchers, students and graduate students.
2. Developing specialized scientific and practical software and systems for the automation of manual systems at the university.
3. Create a library of books, periodicals and films.
4. Conducting studies and researches in the field of computers and their applications.
5. Provide technical consultations to the computer departments in the university and other state departments.

The CMC plans to establish centers for training and scientific research in the field of Communications and Information Technology to provide modern software, devices, equipment and measuring devices to simulate the communication technologies in the digital market. This aims to support the implementation of practical

and academic experiences in connection with the curricula of the departments of electronic engineering, communications, information technology and networks in cooperation with the Ministry of Higher Education and Scientific Research and private sector companies. These centers are planned to serve as center of excellence for training and scientific research in Iraq,

3. Government facilitation, Investments and Financing the ICT sector

In general, the Government represented by the Ministry of Finance allocates funds for the state's institutions to implement their projects. The Government also encourages ministries to adopt the principles of investment promotion and partnership with private sector companies whether they are local, Arab or foreign.

The Government allocates a considerable percentage of its budget for the implementation of ICT networks projects. The Government used to have full control and direct supervision on the implementation of these projects, being the sole player in this regard. Later on, the Government started to consider the importance of empowering and partnering with the private sector to implement projects, while the government confines its role to the overall management.

To secure the required funding for the projects execution, the Government encouraged banks to finance the private sector's investment in Iraq. Other sources of financing the ICT projects include the contributions of international organizations and donors, such as JICA, UNESCO, the World Bank, and KOICA.

A new project has been planned to build a smart village to provide a conducive environment for government institutions and companies operating in Iraq (including telecom operators, manufacturers, vendors, banks and other financial institutions) in terms of providing all the required high-level services such as buildings, conference rooms, exhibition centers, public library, hotel, etc.). This aims to support and attract foreign investment, promote domestic investments and support emerging ICT companies. In addition, a main objective of establishing this smart village is to strengthen Iraq's regional and international position and revive its economy through offering opportunities for investments as an effective step towards building an information society.

Furthermore, the General Secretariat of the Council of Ministers in cooperation with the UNCTAD and in coordination with the Economic Department at the US Embassy in Baghdad launched the Baghdad electronic portal for the documentation and simplification of procedures for investors and registration of foreign companies.

Through this portal, the procedures for registration of foreign investment companies was reduced from 34 to 18 steps and set the expected time for obtaining the registration certificate between 5 to 11 days the portal includes all administrative services that covers all current and future sectors. The portal contains a manual of procedures for registration of companies, the mechanism of submitting the required documents, steps to obtain the relevant certificates, steps to obtain the approval of registration and the license of the work of foreign companies.

The portal also provides investors with a summary of the registration procedures, the documents required to be submitted during registration, the costs/fees of each step and provides the pertinent regulatory framework for the companies' operations and for investment.

B. Economic Impact of the ICT Sector (C12++)

1. Contribution of ICT sector in the national economy

The Government allocates large sums of the public budget to ministries to implement their respective planned projects including ICT. There is no particular percentage of these funds dedicated to ICT projects per se, because it is up to each ministry to divide its expenditure according to its spending priorities. In this regard, certain ministries, such as the Ministry of Higher Education, the Ministry of Communication and the Ministry of Science and Technology allocate more spending to finance ICT projects comparing to other ministries. Estimated and unofficial statistics indicate that ICT projects in all Iraq receives 2 per cent of the total public budget. The Government encourages resorting to local companies in obtaining small and medium ICT solutions, however Arab and foreign private companies provide larger and more advanced ICT solutions.

2. Trade in ICT goods and services, and ICT-enabled-services (e-Trade)

No information available.

3. E-business

The Iraqi Central Bank is working on a project aims to promote cashless transactions through paying salaries to the government employees through cards issued by banks operating in Iraq. The project aims to reduce the total cost of paying salaries and maintaining cash within the banking system. Employees benefit from obtaining a bank account that enables them to deal with all ATM machines and points of sale inside the country, and they also benefit from accessing all other banking services such as loans and credit cards. This banking strategy creates a competitive and fair environment, where the employee has the right to choose the bank according to the best financial and banking services and the most suitable prices.

Thanks to the Ministry of Communication's efforts to electronically linking the banks to each other, the Government encouraged the banks to benefit from the communication technology available for the exchange and circulation of e-transactions to serve the citizens. In this connection, the Iraqi Central Bank drafted an e-banking law and transferred it to the State Shura Council to discuss and approve it in order to develop the required legislative framework to effectively regulate this field.

Moreover, although the national ICT strategy includes clauses to encourage and facilitate e-commerce, the e-commerce activities are still very limited in Iraq, and e-payments solutions are only available through banks and private sector companies which offer e-payment cards to their clients. Some companies added links to their websites which allow the citizens to purchase and sell of merchandise, these companies would then act as mediators in the delivery of merchandise to the customers.

E-business has seen a significant increase in Iraq in recent years. Alongside the establishment of specialized e-commerce sites/platforms, many traders have begun to promote their goods through social networking websites. The payment is done through financial services companies such as Visa, MasterCard and PayPal in addition to payment after delivery to customers who do not use electronic payment.

Laws/services	Available?	Law number	Year Passed
e-banking services	No (draft)		
e-payment law	No		
Name other laws on e-services	e-signature and e-transactions law	No. 78	2012

4. Employment in the ICT sector

ICT has significantly affected the growth of employment in Iraq various sectors that have introduced information and communication technology into their work. Also, ICT has greatly contributed to job creation for the youth (males and females) in Iraq through the new markets it has made available. The employment in the ICT sector in Iraq consists of jobs in the government sector, where the number of employees working for the specialized government entities (MOC, CMC and the state companies) is close to 15,000 employees in various specialties, in addition to the technical employees working in the ICT field across other government institutions as all the government entities have an IT department.

Furthermore, the private sector in Iraq offer various job opportunities in the mobile operators, ISPs, IT companies that provide services of electronics, software and applications, this is in addition to the independent (freelance) jobs.

5. E-employment

As an initiative by the universities in order to fully comply with the quality standards, most colleges have introduced units to follow up on graduate affairs. These units have built databases for graduate students (CVs and contact info) to help them to find jobs electronically. In addition, a number of retired professors designed a website allowing any graduate to register their name and upload their CV on one hand, and on the other hand the website allows private sector companies to view the database and contact the graduates for available vacancies. On the government side, a recent official circular issued, under Tawtheef initiative[7], requesting all ministries to add a link on their websites which would allow new graduates to apply online to available vacancies at the ministries. Employment committees at ministries study the application forms, assess them, then it publishes the names of the accepted applicants on the website.

IV. Cluster Four: Digital Transformation and Social Inclusion Policy Areas

A. Inclusive and Empowering Access to relevant information, knowledge, applications and Content (C3)

1. Inclusiveness (access): Availability, Development, Affordability, and Adaptability

The CMC started the implementation of a comprehensive service project, which aims to enable all segments of society to benefit from telecommunications and information services across the country to have access to knowledge and information, thus contributing to raising their technological awareness.

Through this project, the CMC seeks to provide voice communications services to remote areas and communities where there are no telecom services. The project also establishes IT centers in primary and secondary schools, thus contributing to enhancing the capacity building of students in this field. In this regard, the CMC started collecting information and statistics and conducting surveys in coordination with the relevant authorities in the Ministry of Planning, the Ministry of Commerce, the Ministry of Education, the UNESCO and other bodies to identify areas that lack telecommunications services and the operation of an integrated database of primary and secondary schools in remote areas across Iraq.

[7] https://tawtheef.gov.iq/

During the first phase of the project, a number of areas have been identified, the documents and requirements for providing the service to those areas have been prepared, in addition, the requirements for establishing and operating the IT centers and laboratories in schools have been prepared.

2. *Empowerment (use): Educational, Entertainment, Political Engagement, Economic Returns*

The CMC adopted an initiative for people with special needs to ensure their access to equal opportunities to promote their inclusion and integration in the society. CMC opened a training center for people with special needs to build their capacities, thus empowering them. The first phase of the training program focused on those have a certificate in the field of communications and information technology. Also, the CMC cooperates with the International Telecommunication Union (ITU) to develop a comprehensive accessibility policy involving public and private sectors.

In cooperation with the Ministry of Higher Education and Scientific Research, CMC launched programs of competitions for the Iraqi students in the field of ICT. These competitions aim to promote innovation, teamwork and scientific development among all Iraqi students. The competitions include a number of activities such as workshops, research, presentations, among others. The students work is assessed by a Board of Governors composed of representatives from CMC and a number of private companies. The winners of these competitions are to be granted training opportunities abroad in the academies of the participating /companies/manufacturers.

B. Capacity building on ICT4D/Digital Development (C4)

1. *ICT in Education and Training (including e-Learning)*

The ICT sector offers learning opportunities for the public by using ICT tools students and teachers training, providing information to the students in an interactive manner and developing modern learning curricula. E-learning in Iraq can be summarized as follows:

- Designing learning packages to deliver the scientific material to the students. There are many of such packages in the Ministry of Education and are present on the site: www.manahj.edu.iq;
- Publishing the lectures of university professors on websites for the students to read;
- Cooperation between some ministries and the Ministry of Higher Education in offering modern ICT courses and direct online learning;
- E-learning centers were introduced in many universities, where the professors design their electronic lectures that are academically assessed by a special committee to ensure they meet the quality standards. The effectiveness of these lectures is assessed through questionnaires before being published on their server. This provides the students the opportunity to download the lectures to their PCs and electronic devices;
- Making the Iraqi Virtual Science Library accessible to all universities and most of the ministries.

2. *Targeted Training programmes (for capacity building on the use of ICT4D)*

The Communication and Media Commission and computer centers of different universities in addition to the private sector centers annually offer training courses in most of IT specializations with only token fees.

Computer centers offered courses and standard training programs to their trainees since 2005. Tremendous efforts were made to acquire authorization from international organizations to administer direct exams through the Internet in all IT specializations. The Computer Centre Administration in the University of Baghdad was able to open four academies for the courses and programs of Cisco, Microsoft, IBM, and Oracle. The Administration managed to open an international examination center.

C. ICT applications (C7)

1. E-Government

A higher Committee to coordinate and manage the Government activities towards the establishment of the e-government was established by Decree No. 45 of 2016. The tasks of the committee were defined as setting the general regulations and standards for the ICT sector in addition to preparing a realistic national plan that contributes to the transformation towards electronic government. This committee consists of a number of teams:

- Infrastructure Team.
- Applications and e-Services Team.
- Policy and Legal Framework Team.

The Infrastructure Team is working on implementation of the e-government projects based on the infrastructure owned by the Ministry of Communications including fiber-optic cable networks and modern technologies for the LTE Fixed network. There is a plan also to establish a private network to connect the headquarters of the ministries with their affiliated subsidiaries and connect the government departments with the governorates' councils.

The Applications and e-Services Team is working on the implementation of a platform for the e-services for the government institutions, includes:

- Human resources management system and a unified salary system that to be applied in institutions that lack such systems.
- Document management system to be applied in institutions that lack such system.
- Unified accounting system to be applied in institutions that lack such systems.

The Applications and e-Services Team is also working on the implementation of a platform for e-services for the citizens and business, specifically includes:

- Issuing the national card;
- Services of traffic departments;
- Issuing passports;
- Issuing birth certificates and death certificates;
- Welfare and social protection services;
- Services pertinent to marriage and divorce at the Courts;
- Issuing the ration card;
- Issuing the housing card;
- Solicitor services;
- Real estate registration services;
- Registration of companies;
- Tax services.

The Policy and legal framework Team is working on editing 3 draft laws; the e-government law, Personal Data Protection law and a law on the Protection of Telecommunications and Information Infrastructure.

Name of Authority in Charge of ICT in Public Administrations	*English Name: General Secretariat of the Council of Ministers* *Arabic Name: الأمانة العامة لمجلس الوزراء* *URL: http://cabinet.iq/*
Name of e-Government authority	*English Name: General Secretariat of the Council of Ministers* *Arabic Name: الأمانة العامة لمجلس الوزراء* *URL: http://cabinet.iq/*
Number of implemented government e-services	
Number of planned government e-services	*15-20*

URL of e-government portal: *(http://www.egs.iq)*		
Information	General	*Yes*
	Laws	*Yes*
	Directories	*Yes*
Services	Static Info	*Yes*
	Downloadable Forms	*Yes*
	Interactive	*Yes*
e-payment		*No*
Online account		*No*
Bilingual		*Ar*
Citizen Participation	Blogs	*Yes*
	Polls	*Yes*
Social Media	Facebook	*No*
	Twitter	*No*
	LinkedIn	*No*
	YouTube	*No*
	Other	
Additional Services	RSS	*No*
	Web Statistics	*No*
	Search	*Yes*
Mobile version	Support for smartphone/tablet	*No*
	Dedicated App (iOS or Android based)	*No*

2. E-health

An e-health strategy is adopted by the Ministry of Health. This strategy integrates the following systems:

- The Health Information System (HIS);
- The use of smart cards for patients' numbers and their essential medical information;
- Electronic Medical Records (EMR)/Electronic Health Records (EHR);
- E-Pharmacy;

- Monitoring and tracking the status of the emergencies (from home to the ambulance to the emergency room/ the operating rooms), taking the following into account:
  - ❖ The availability of Mobile Health (m-Health) equipment;
  - ❖ The ambulance car is equipped with a full set of portable medical equipment with a GPS system and a smart card reader;
  - ❖ Following critical cases from inside the ambulance car.
- Connecting the labs through a medical information network inside hospitals which have data transfer units;
- Asset Tracking System;
- Medical Imaging including MRI and so on.

Moreover, the Ministry of Health implemented the Health Visitor programme, which is one of the most advanced programs that serves a wide range of citizens in Iraq. The program facilitates the communication between the citizens and the health centers through using the latest advanced technologies for the benefit of the public. The Health Visitor help creating and using a complete electronic file for each citizen to demonstrate their health conditions and all other necessary information. The Health Visitor should help the health centers to identify the health problems/diseases that are spreading within their geographical area, to study the respective citizens' health status, economic and social conditions, demographic structure, access to services, identify the causes of diseases, ways in order to develop solutions to combat and mitigate in cooperation with the relevant bodies in the center's area of services.

The programme also considers the schedule of family vaccines. It also focuses on raising the awareness of patients require a specific diet, in addition to providing maternal and child care (including school health services to be offered inside or outside schools), adolescents and the elderly care, psychological care, oral and dental health, basic immunizations, among others.

V. Cluster Five: Culture and Media Policy Areas

A. Cultural identity and linguistic diversity (C8)

No information available.

B. Media (C9)

1. Media diversity, independence and pluralism

Before the change of the political regime in 2003, media had been neither independent nor various . After the regime change, the opportunity was given to establish TV and radio stations without any restraints while enjoying full freedom. The Iraqi Communication and Media Commission (CMC) was formed under law no. 65 of 2004 to regulate this domain. It is expected that a new law to be issued as its draft is currently being discussed in the House of Representatives. CMC has the following tasks:

- Issuing licenses to TV and Radio stations;
- Ensuring t full freedom and independence to the licensed TV and Radio stations whilst maintaining a supervision and follow up role on these stations to ensure their compliance with the national laws and relevant international treaties.

There are more than 30 Iraqi TV stations; most of them are privately owned. The Communication and Media Commission offers all registration and license information to all types of media through its website.

In order to guarantee the rights for all, the CMC issued a number of regulations governing the means of broadcasting in Iraq. These regulations include codes of practice for the media, a list of media rules and regulations, general guidelines on the accuracy and balance of the news broadcasted, combating incitement to violence and hatred. These regulations were developed in line with international best practices and relevant international conventions and treaties such as article 19 of the International Covenant on Civil and Political Rights (ICCPR) article 19 of the Universal Declaration of Human Rights

Media outlets	Language(s)	Ownership	
		Private	Government
Newspapers	Arabic	7	1
News agency	Arabic	50	-
Radio stations	Arabic	98	44
	English	0	1
Television stations	Arabic	38	9
	English	2	0

2. The media and its role in the Information Society

To increase their cultural role in society, some of the media channels in Iraq broadcasts in more than one language, and all media channels in Iraq use advanced technologies such as audio-visual interactive systems. The Communication and Media Commission was an exemplar for the rest of media channels in this regard as it did the following:

- Creating of a website (www.cmc.iq) which contains all information, laws, and activities of the commission;
- Issuing a monthly magazine (Tawassul) to build ICT awareness;
- Organizing several conferences about the status and principles of media in Iraq.

There are several educational TV channels which broadcast the lessons of the intermediary and preparatory grades of school in addition to general lectures that are directed to parents for raising IT awareness through teaching computer. Furthermore, most channels host ICT specialists to discuss the benefits and harms of using the new electronic devices (tablets and smart phones). A TV channel called “Al-Jamiyyiah” was created to document the activities of the Ministry of Higher Education, universities and colleges.

3. Convergence between ICT and the media

No information available.

4. Social Media in the Arab World

Today, social media has created new ways of communications in the society, which had a significant impact on people's daily lives. Social media has brought people together with their needs and requirements and provided them with the virtual environment to meet these requirements, which has widened the horizons of ideas all over the world.
The advantages of using the social media in Iraq could be summarized as below:

- Social media can add creativity to thinking where people share their views and work with others.
- It allows people to discover and engage actively without fear of rejection.

- Building social relationships, improving the self-efficacy of the person, and enhancing cognitive flexibility and self-control.
- Social networking sites helped people to find jobs in their area of interest.
- Social networking sites have become one of the most important promotional and advertising outlets.
- Social networking sites have a great role in the economic and commercial aspects.
- The exchange of ideas between people from very different cultures allows a deep understanding of the people themselves and religions.

However, the impact of social media may have some negative aspects specially on youth who might still not have good awareness of properly using social media and still not culturally mature enough.

In this regard, the disadvantages of using the social media in Iraq could be summarized as follows:

- Restricting direct interactions needed to develop characters and learn social and communication skills, which can lead to inappropriate behavior specially for children.
- The possible misuse of social media in terms of hacking, privacy breaching and other cybercrimes,
- Most studies have shown that violent games of social media lead to increased attitudes of violence among children.
- The use of social media as a tool to spread the misinformation and rumors over the internet.
- Health effects due to excessive use and spending long hours on social media, which may sometimes lead to addiction.