

Palestine Digital Development Report – 2019 Towards Empowering People and Ensuring Inclusiveness

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Cluster I

Strategic Frameworks

WSIS and SDGs

Cluster 2

State

Infrastrucure, Governance, Legal Environment

Cluster 3

Economy

Production, Competitiveness of ICT Sector and Economic Growth

Cluster 4 Society

Transformation of Public Administration and Social Inclusion

Cluster 5

Culture and Media

Cultural identity, linguistic diversity, and Media

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 Economyetc.)	No
Name of the Strategy	
Year of adoption and latest update	NA
Government agency in charge	Name in English: NA
	Name in Arabic: NA
Pace of implementation	NA
Description of progress made (about 150 words)	
Sectoral (ICT):	Yes
ICT Sector strategy / plan exists	
Name of the strategy / plan	ICT and Post Sectoral Strategic Plan ¹
Year of adoption and latest update	2017
Government agency in charge	Name in English: Ministry of Telecommunication and Information Technology
	وزارة الاتصالات وتكنولوجيا المعلومات :Name in Arabic
Pace of implementation	Good
Description of progress made (about 150 words)	The general goals of the IT sector in the national IT strategy are:
	1. High-quality, state-of-the-art automated services.
	2. An advanced information technology sector and a contributing producer in the development of the national economy.
	3. A secure environment that provides confidence and security in the use of information technology.
	4. An enabling environment that encourages investment in the IT sector.
	5. A structured legislative and legal environment for the information technology sector.
	6. A creative and trained generation to develop the

 $^{^{1} \}underline{https://www.mtit.pna.ps/Content/files/plains_and_strategies/ar/-8586172493377591831Strategic%20Plan%202017-2022.pdf}{} \\$

	level of information technology in Palestine.			
	7. Palestinian content that supports the plan for the establishment of a Palestinian state and strengthens its presence on the World Wide Web.			
	8. Arabic content serving all areas of life.			
	9. A society that is intellectually educated.			
Other Sectors:	Yes			
Digital Transformation strategy / plan exists (Digital Learning / Digital Healthetc.				
(Repeat this section -5 rows $-as$ required)				
Name of the strategy /Plan	Transition strategy from analogue terrestrial television broadcasting to digital terrestrial television broadcasting ²			
Year of adoption and latest update	2015			
Government agency in charge	Name in English: Ministry of Telecommunication and Information Technology			
	وزارة الاتصالات وتكنولوجيا المعلومات :Name in Arabic			
Pace of implementation	Excellent			
Description of progress made (about 150 words)	The transformation process has two goals for digital broadcasting			
	 The first is the optimal use of frequency spectrum. Digital broadcasting uses more than one channel at the same frequency. This will give the ministry an abundance of frequencies that can be used in other sectors. Second: Digital transformation provides power in the broadcast and provides energy to ground stations. 			

B. National Engagement in International and Regional Cooperation Initiatives

1. WSIS Follow-up

There is a national strategy for the ICT sector and a national policy agenda. The strategy of the ICT sector and its policy agenda in Palestine is fully consistent with the goals of sustainable development 2030. Palestine has worked to achieve the lines of action adopted in the Geneva Plan of Action 2003 to achieve economic development through boosting the social and scientific, cognitive and economic levels to improve the quality of life of the Palestinian citizen. The sector strategy and policy agenda work to fulfil its international obligations.

² <u>https://www.mtit.pna.ps/Content/files/plains_and_strategies/ar/-8586172492452966119seyasat.pdf</u>

In this regard, the Ministry of Telecommunications and Information Technology has worked on many projects, including the project to support start-ups and small enterprises, including the exemption of these companies of 7% of the tax imposed on them.

At the beginning of this year, 3G services were launched in the West Bank and allow (Ooredoo) Wataniya Mobile to provide second-generation services in the Gaza Strip, reducing the digital divide between Palestine and the rest of the world, as well as fostering the significant growth in the ICT sector and other sectors.

2. Other related Frameworks (other than WSIS)

Palestine is engaged in the following projects³ under the Arab regional initiatives adopted by ITU-WTDC for the period 2018-2021

- > Regional Initiative: Environment, climate change and emergency Telecommunications:
 - Project: ICT for Disaster Management

> Regional Initiative: Confidence and security in the use of Telecommunications / information and telecommunications technologies

- Projects:
 - e-government and security mechanisms policy
 - o consultation service for implementing PKI and National Certification Authority Unit
 - National Cyber Security Strategy
- Regional Initiative: Digital Financial inclusion
 - Projects:
 - Mobile Financial Services (MFS)
 - LRIC-Voice and Data Services
- ➢ Regional Initiative: Internet of things, smart cities and big data
 - Projects:
 - Policy for private cloud computing project for government agencies
 - One stop Shop
 - E-services Portal
- Regional Initiative: Innovation and entrepreneurship
 - Projects:
 - Enhancing Innovation and entrepreneurship in ICT sector
 - National Strategy policy for enhancing promoting ICT-enable Innovation
 - Incubation

³ <u>www.mtit.pna.ps</u>

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

A. ICT Infrastructure

1. Market structure and regulatory landscape

In Palestine, there is one landline service company, the Palestinian Telecommunications Company (PalTel) and two mobile operators (Jawwal & Oredoo).

The Ministry of Telecommunication and Information Technology issues the mobile and fixed operators' licenses, monitors their commitments periodically and regulates non-competitive services prices and interconnection prices using a cost-based model.

The Ministry also issues Broadband (BB) license and Bit-Stream Access License (BSA). BSA licensees are to interconnect with dominant fixed line operator in order to offer internet and other services to fixed line customers over ADSL/VDSL network. The model adopted is the layer 3 BSA model (IP Stream) based on the EU common understanding.

The first telecommunications law was issued in 1996. The Ministry of Telecommunications is the regulator of the telecommunications sector in Palestine. It also monitors telecommunications tariffs and telecommunications quality, including landline, mobile, and licenses-related partnerships. the Ministry of Telecommunication's mission is to provide universal access to affordable ICTs, develop ICT skills, applications and postal services, and harness them as a tool for overall economic and social development. Law No. 15 of 2009 aims to establish the Palestinian Telecommunication Regulatory Authority (TRA).

Licensed companies are as described below-

- > PalTel / Mobile Operator (Jawwal / Ooredoo) / Broadband / VOIP
- > Import / Frequencies / Radio & TV / Micro links / BSA / Added services
- Trade / International express mail / ISP (Broadband + BSA)

Telecom Service	Status of regulatory landscape	List all awarded telecom licenses
Mobile services	Competitive	1- Jawwal
		2- Ooredoo
Internet services	Competitive	1- Broadband Comp. No. (3)-2018
		2- VoIP Comp. No. (3)-2018
		3- Import Comp. No. (46)-2018
		4- Frequencies Comp. No. (1)-2018
		5- Radio & TV Comp. No. (30)-2018
		6- Micro links Comp. No. (1)-2018
		7. BSA Comp. No. (2)-2018
		8- Added services Comp. No. (16)-2018

9- Trade Comp. No. (20)-2018 and Market (380)
10- International express mail Comp. No. (12)-2018
11- ISI (Bioadbaild + BSA)

2. ICT Infrastructure by Service Type

The State of Palestine has Mobile phone services, Internet services including Fixed and Mobile broadband, and has Next Gen Wireless but without FTTH.

The State of Palestine has 13 BSA ISP, which offer services over fixed telecom network. In addition, four BB, which build wireless, fixed network (Microwave links, WIFI services). ISPs offer services for over than 360 thousand fixed line out of 476 thousand fixed line subscriptions.

In addition, Palestine has many internet service providers and all of them offer the following services:

- 1- Home Internet / Commercial Internet
- 2- Hosting / Technical Support
- 3- Safe Search / Dynamic DNS (IP Cam) no need to buy fixed IP for Remote Camera Security
- 4- Interactive TV

The Mobile networks in Palestine suffered from the Israeli restrictions on releasing the spectrum and the penetration of the Israeli telecommunications sim cards in the Palestinian market. This led the Ministry of Telecommunication and Information Technology in cooperation with the relevant authorities to stand against this penetration because of the destruction of the local economy. After more than nine years of negotiations and the intervention of a number of countries and the International Telecommunication Union (ITU), Jawwal and Ooredoo launched the 3G service in the first half of 2018.

The number of subscribers of Jawwal mobile phone reached 3.003 million, while the number of subscribers of Ooredoo mobile phone reached 1.002 million

Indicator	Value	Latest Year
Mobile phone penetration	4,300,000	First quarter of 2018
Percentage of households with Internet access	51%	First quarter of 2018
International Internet bandwidth (bit/s) per Internet user		
Percentage of the population covered by mobile networks		
- At least 3G	78%	First quarter of 2018
- At least LTE/WiMAX	0	0
Fixed-broadband subscriptions by speed tiers as a % of total fixed-broadband subscriptions		
- 256 Kbit/s to 2 Mbit/s	4012	2017

- 2 to 10 Mbit/s	192786	2017
- 10 Mbit/s or more	105722	2017

3. ICT connectivity

There is little information available about access initiatives because most of the initiatives are from private sector groups and some international institutions such as KOICA.

4. Internet Architecture

The Internet is available in almost every house in Palestine, and the Palestinian Telecommunications Company owns the infrastructure. Yet, some Internet service providers have their own fiber cables. Private companies also offer wireless Internet access to homes or businesses.

The municipality of Ramallah transformed the city into a smart city and provided wireless internet access to the city as well as the municipality of Al-Bireh.

For 3G services, two companies (Jawwal / Orado) offer frequencies of 3.75 and the third generation was launched after a 10-year conflict between Palestine and Israel.

The fiber optic network is available in Palestine, not for the premises, but for private companies, government institutions and other institutions.

Palestine is currently in the process of moving to IPv6 and a data centre has been equipped for this with a full laboratory.

5. Domain name management and adoption

Palestinian National Internet Naming Authority (PNINA) manage domains name in Palestine. Including two domains (.ps and فلسطين)

Name of ccTLD	Name in English:				
registrar	Palestinian National Internet Naming Authority (PNINA) Name in Arabic: الهيئة الوطنية الفلسطينية لمسميات الانترنت				
URL of registrar	http://www.pnina.ps/				
Total Number of	Year	2015	2016	2017	
the country for the years 2015, 2016, and 2017.	Number of ccTLDs registered in the country	1755	1835	1607	

Moreover, PNINA has done several efforts to launch IDN (.falasteen), as follows:

• PNINA followed up the registration of (.falasteen) that has been announced after the ICANN's board of directors approval on 15 August 2010. ICANN completed the technical check-ups and registered the DNS's on the root servers not only for Palestine but for other Arab countries such as Jordan and Tunisia.

- Early in 2010, PNINA has completed all the preparations for the launch of the new Palestinian Toplevel domain in Arabic including the related registration policies and procedures as well as pricing scheme and dispute resolution policies.
- The registration was opened in two stages, the first on 17 October 2010 for local and international organizations including companies and trademark holders to enable register their domain names in Arabic language through PNINA Certified Registrars.
- The second stage started on 2 January 2011 when the registration opened for local and international individuals and institutions. Only applications with correct and complete information were considered for registration, where PNINA ensured that all applications processed on equal basis and according to the first-come-first-served principle.
- PNINA published the registration policies and procedures for the new Top-Level domain on its official website on 15 September 2010
- Now more than 1050 Arabic IDN domains are registered.

B.Governance

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

The Ministry of Telecommunications and Information Technology (MTIT) adopted the ICT Strategy 2017-2022. While preparing the strategy, a team from the ministry had been in charge of the preparation and drafting process, where the invited all partners from different sectors (academic sector / internet providers / landline / mobile phone companies) as well as the General Authority of the Palestinian Information Technology Association to participate in this preparation. In this regard, several dialogue sessions were held, and the partners made amendments to the drat strategy.

In addition, the concept of stakeholders' engagement applies in all procedures within the Palestinian heap, where the ministries involve any party outside the government in any committee or team falls within the competence of the work of this partner.

On the local level, MTIT participates in many projects that help the development of smart cities and pertinent services. Such efforts are done in cooperation with several universities and Municipalities. In addition, MTIT support municipalities' efforts in offering several free ICT services including access to internet with the cooperation of different stakeholders

The following are few concrete examples that were made in Palestine of partnerships that represented success stories and their outcomes, which reflected on the rehabilitation of individuals and their contact with the Palestinian citizen:

- 1- The partnership between the Ministry of Labor, Palestinian banks and Palestinian capital for providing concessional loans for unemployed youth with soft conditions and a long repayment period that allows young people to develop, run and manage their own projects.
- 2- Partnerships between Palestinian ministries, institutions and universities to train graduates and qualify them for future job opportunities. There are also joint projects between the Palestinian universities and the private sector to accommodate the number of graduates, especially in specializations and distinguished graduates.
- 3- Partnerships between government institutions and ministries as well as the private sector with donor countries and UN organizations to implement development projects in the various sectors, namely infrastructure, water and sanitation sector, electricity and alternative energy sector, health sector, education, industry, economy and many other sectors covering all areas of development work and construction. Institutional development.
- 4- Successful partnerships between ministries, government institutions and research centers, including the MAS Research Centre, ARIJ, and the Centre for Women's Studies, the Centre for Public Health

Studies, and other research centers are conducted to conduct analytical studies on the country's situation from various perspectives and develop future perspectives and proposals for development.

2. Participation in Internet Governance activities

There is a dialogue between stakeholders such as the executive authority, telecommunications companies, banks and the private sector to reach a national policy for Internet governance. Moreover, the government is keen to raise awareness of Internet governance, which is done through the awareness leaflets and the organization of workshops to communicate the idea and objectives of the Internet Governance Forum

The last participation in the Arab Internet Governance Forum was in Beirut from 4-7 December 2018. The participation was very fruitful to know what the members of the participating countries have reached in this regard. It also discussed and explored the efforts of applying the Internet governance in the Arab countries, identifying the pertinent purposes. On the national level, there is no locally organized national governance forum on a regular basis.

In addition, on the global level, the Palestinian state always participate in the Internet Governance Forum and strive to apply IGF recommendations. The Ministry of Telecommunications and Information Technology also participates in the ICANN's Governmental Advisory Committee (GAC).

C. Legal environment, ethics and building trust

1. Legal and regulatory environment

The following are the pertinent pieces of legislations that constitute the regulatory framework that governs the information society in Palestine:

• Telecom and Internet legislations and regulations:

- ► Law no. 3 of 1996 on Telecommunications
- ➤ Law no. 10 of 2018 on Electronic Crimes
- ➤ A draft law on the protection of personal data
- Cyber legislation, especially those related to e-signature, e-transactions, e-commerce and e-payment: Electronic Transactions Law no. 15 of 2017

• Intellectual property (IPR);

There is no modern law governing intellectual property issues in Palestine, there are some very old legislations with regard to Intellectual property. The Palestinian trademark and patent laws of 1938 are adopted in Gaza Strip, while the Jordanian laws are adopted in the West Bank. The two laws are very similar. For obtaining full protection all over the Palestinian territories, we recommend filing in both jurisdictions. Palestine is not a member of any international convention but abides by the International Classification of Goods and Services for the Purposes of the Registration of Marks under the Nice Agreement⁴.

⁴ <u>https://www.agip.com/Agip_Country_Service.aspx?country_key=910&service_key=T</u>

International Treaties and Conventions on Intellectual Property	Adopted (Y/N) or Observer	Year of Adoption
WTO	No	
Paris Convention	Yes	1994
РСТ	No	
WCT	Yes (Palestine is a member of the Arab Convention for the Protection of Copyright. Palestine has been an observer member of the World Intellectual Property Organization (WIPO) since 1998)	1981
Madrid Agreement	No	
Hague Agreement	Yes	2014
PLT	No	
TRIPS	No	

Cyber Laws	Available?	Law number	Year Passed	
e-transactions law ⁵	Yes	15	2017	
e-signature law ⁶	Yes	15	2017	
e-payment law ⁷	Yes	17	2012	
e-commerce	No			
Management of PKI available	Yes	Within the Electronic T which provided for the an electronic authentic	Transactions Act, establishment of cation unit	

2. Privacy and Data protection

There is no specific law for the protection of data privacy. a Ministerial Committee headed by the Ministry of Telecommunications is working on preparing the first draft of a respective law a year ago. Electronic Crimes Act no. 10 of 2018 includes some articles to protect data privacy of individuals and identify the respective sanctions and punishment.

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⁵ <u>https://maqam.najah.edu/legislation/14/</u>

⁶ Ibid

https://www.pma.ps/Portals/0/Users/002/02/2/Legislation/Laws/Presidential_Decree_No_17_of_2012_on_National_Payments_Law.pdf

The Ministry of Telecommunications and Information Technology has issued a series of online safety guidelines⁸ on the International Day of Security and Safety on the Internet. The Ministry said that the slogan of the campaign this year is "Create, connect and share respect: A better internet starts with you". The Ministry's vision is to lead the process of raising the awareness of the Palestinian public through all the media, besides the role of providing protection for government data and developing an infrastructure that can repel the cyber-attacks against Palestine to be able to protect its citizens likewise the countries of the world.

The guidelines include several tips for using social networks, privacy mechanisms and personal information. It also covers the protection of wireless network connections for subscribers through wireless internet settings, the need to choose a strong, complex password for the network, and periodic modification.

The instructions also highlight the bad habits that destroy the electronic security of users such as easy passwords, and the activation of the geographical location through the service of GPS, and mentioned many methods to increase the security of the user and protect his computer from spyware such as checking the links sent.

Also, the user is made aware of the privacy on the Internet and means of privacy protection through the advertisements and announcements of the Ministry of Telecommunications that are uploaded on the Ministry's website (<u>http://www.mtit.pna.ps</u>) and the Ministry's page on Facebook (<u>http://www.facebook.com/MTITPalestine/</u>).

3. Countering misuse and preventing abuse of ICTs

- 1- E-transactions Law no. 15 of 2017
- 2- The draft law on the protection of personal data
- 3- Electronic Crimes Act no. 10 of 2018

There are ranges of publications, awareness raising and education in the field of Information Security It is published through social networking sites and the official website of The Palestinian CERT (PALCERT). This includes the issuance of an information security policy document in 2012. Regarding education, in the last two academic semesters in 2018, the Internet Society-Palestine Chapter launched an awareness campaign for Palestinian schoolgirls on sexual harassment and blackmail through the Internet⁹.

4. Use of electronic transactions and documents

A stand-alone e-signature law has been written and is awaiting approval from the Palestinian government.

However, MTIT has the X-Road data transfer carrier through the issuance of an AC (Authentication Certificate), a public key and a private key to ensure the security of the information transmitted. MTIT is responsible for this. Also, the aforementioned are used as SSL Certificates and firewalls.

⁸ <u>https://www.mtit.gov.ps/index.php/c_home/showNew/2119</u>

⁹ youtu.be/zFB2t0cGylA

5. Online and network security

The State of Palestine does not have a national security strategy, but there is an information security management system that contains a set of rules that must be met in all institutions to ensure information security and a secure information environment.

However, Palestine established the Palestinian CERT (PALCERT) was established in 2015 to respond to computer security and cybersecurity incidents by providing necessary services to a defined constituency to effectively identify and coordinate threats at governmental levels. Information dissemination and focal point for the constituency in matters related to cybersecurity. PALCERT primarily focuses on the response to ICT related security incidents on behalf of one or more stakeholders in order to provide an overarching cybersecurity services to a constituency. In addition, A technical laboratory has been established to investigate and detect electronic crimes, and the PALCERT Centre was created to monitor and reduce attacks at the national level.

PALCERT activities are:

- Monitor cyber-attacks and breakthroughs.
- Detect and deal with cyber incidents.
- Training sessions and workshops in the field of information security. Publication of awareness and education for the risks of cyber security.

The number of incidents recorded since the PALCERT inception are 11 cases

MTIT launched an application called "My Government" that provides to citizens several e-government services of three public entities; the Land Authority, the Ministry of Labour and the Ministry of Transport. These services include:

- the sale of land and apartments of various kinds.
- the sale and delivery, transfer, pledge and foreclosure and ask for a request for permission to buy land or apartment.
- work permits.
- list of the last theoretical and practical examinations in the last application and the result of each exam (only for applicants).
- the list of vehicles owned by the user (for those who own it).

In this regard, the following cyber-security measures are adopted to secure the e-transactions relevant to the above-mentioned services:

- Take a backup of transactions.
- Data encryption.
- Separation of powers in transactions.
- Monitoring the technical and legal procedures of transactions.

Furthermore, the official website of the PalCert Centre was established. Its main objectives are the dissemination of warnings and security alerts, the publication of awareness leaflets for non-standardization, and the clarification of some security flaws in the software.

The following are the measures taken for the protection of data and network:

- A group of devices are available to protect the data from intrusions
- Apply a set of procedures and rules on the network to ensure their protection
- Make the necessary updates for the hardware and software periodically and continuously
- Verification of their effectiveness through the monitor

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

A. Building the ICT Sector

1. ICT Firms

We do not have statistics for information technology workers in Palestine, especially gender-disaggregated statistics in the private sector, but the available statistics shows the percentage of females and males working in various fields.

There are two types of IT companies in Palestine:

- 1- Software producing companies, whether computer-based or computer-based systems. The workers are Palestinian hands.
- 2- IT Companies for information technology that are often a major distributor of global companies such as (Cisco / Kaspersky ... etc.)

The Palestinian government is interested in institutionalizing the relationship with the private sector and achieving complementarity in this regard. This particularly aims at addressing the difficult financial situation of the State of Palestine, supporting and developing the private sector institutions and enabling them to carry out their work and to provide quality service to all sectors of the economy, which is a strategic objective of the Palestinian government in light of engaging all stakeholders in the public and private sectors to achieve this goal.

There is no official policy to encourage women to apply for IT vacancies, but there are workshops in this regard with awareness campaigns.

Yet, in order to advance the current status of women in the technology sector, the Government needs to improve gender-disaggregated data collection systems that enable understanding the fundamental issues of females and males in the technology sector and to clarify the relationship between women's IT-related education and training and their role in the labour market and economy. The data that demonstrates women's participation in the technology sector are available to some extent only in the public sector, but in the private sector the data is almost not existing.

a. Telecommunications Companies

Palestine Telecommunications Company (Paltel). Paltel Group consists of four companies:

- Palestine Telecommunications (Paltel).
- Palestine Cellular Communications Ltd. (Jawwal)
- Hadara Company (Internet provider)
- Reach (Contact center)

b. Content Firms (Local and national digital content development)

No information available.

c. Software Companies

There is a large number of software development and production companies using new global technologies and these companies, Palestine has 126 companies for software development. The following companies are examples to firms that are specialized in programming and system analysis¹⁰:

- Innotech: Innotech is a rapidly growing company located in Ramallah, Palestine. It was founded to provide innovative solutions that benefits our customers and assists them with their needs. We starve to deliver professional and efficient applications. Innotech has many services including web, desktop and mobile development, quality assurance and database design.
- Radix Technologies: Based on customer business needs, Radix provides its services by either providing dedicated IT professionals in the form of business processes outsourcing (BPO) or by providing turnkey solutions and projects (IT Outsourcing-ITO). Our services include solutions design, requirements analysis, software development, APIs development, integration, quality assurance, maintenance and support. This includes mobile app development, web app development, cloud development.

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

The State of Palestine does not have a national strategy related to research and development

Yet, Palestine did not omit the importance of having institutions and activities that support R&D in the country, in the regard, the Supreme Council for Creativity and Excellence¹¹ was established by Decree No. 13 of 2013, and it builds unique and innovative ideas and provides full support to them. The Council aims to play a leading role towards consolidating a culture of innovation and excellence among the Palestinian community and ensuring fair empowerment of all those innovators and creative people. It also works towards strengthening the innovation and creativity ecosystem in various sectors, so that creativity becomes mainstay of the economy and the desired knowledge society.

Furthermore, there are eight training rooms at the highest level of the Ministry of Telecommunications and Information Technology which are equipped for the preparation of studies and research in addition to providing any other technical assistance related to the information technology sector.

The number of R&D staff (in <u>all sectors</u>) in 2016 in Palestine was 10,715, where 6,162 were full-time workers. The number of researchers in Palestine was 5,833, where 3,492 were full-time researchers. Males represents 77% of the total number of while female represents 23%.

The reality of R&D in Palestine suffers from a sever weaknesses and is unable to increases the competitiveness of the Palestinian industry, which necessitates the adoption of a set of policies related to stimulating research-based innovation and ensuring the necessary conducive environment.

¹⁰ <u>https://smartindex.ps/company_search/%D8%A7%D9%84%D8%A8%D8%AD%D8%AB-%D8%B9%D9%86-</u> %D8%A7%D9%84%D8%B4%D8%B1%D9%83%D8%A7%D8%A4/2department=37&subdepartment=112&city=&adva

<u>%D8%A7%D9%84%D8%B4%D8%B1%D9%83%D8%A7%D8%AA/?department=37&subdepartment=112&city=&advanced_sear_ch_box=&submit-advcomsearch=</u>

¹¹ http://www.hcie.ps

The R&D sector is affected in one way or another by the political and economic conditions in the Palestinian territories, which in general have negatively affected all economic activities, especially the industrial sector and its ability to develop new and innovative goods that can compete with imported products from Israel or Arab and foreign countries.

Palestine succeeded in launching a project to establish the Technology and Innovation Support Centres (TISCs) in the Palestinian universities. This is an outcome of the agreement signed between the Ministry of Economy, the Supreme Council for Creativity and Excellence and the World Intellectual Property Organization (WIPO) to promote the culture of innovation, excellence and stimulate scientific research for its impact on the Palestinian economy. This agreement is in line with the ICT and Post Sectoral Strategy (2017-2022). Also, A national strategy for innovation and intellectual property entitled "Towards a State of Creativity and Innovation" will be developed in cooperation with WIPO.

With regard to Intellectual Property in Palestine, Palestine formally joined the Berne Convention in 1933, and the Palestine Liberation Organization (PLO) signed in 1981 the Arab conventions for the protection of copyright. Moreover, Palestine became an observer member officially registered with WIPO in 2005.

The following demonstrates the prominent scientific research foundations in Palestine:

- Applied Research Institute Jerusalem
- BADIL / Palestinian Centre for Residency and Refugee Rights
- Palestinian Centre for Policy and Survey Research
- Centre for Development Studies Birzeit University
- Institute of Health and Development Information and Policies
- Institute for Palestine Studies
- Institute of Palestinian Israeli Studies and Studies
- Jerusalem Media and Communication Centre
- Centre for Developmental Action
- Palestinian Academic Society for International Affairs Jerusalem
- Palestinian Economic Policy Research Institute MAS
- Palestinian National Information Centre State Information Service
- AlSabil Centre
- Palestinian Return Centre
- Economic Research Forum

3. Government facilitation, Investments and Financing the ICT sector

The Government is assisting emerging companies by exempting them from registration and billing fees. This includes exempting emerging companies from registration fees and tax exemption for about two years. The Ministry of Telecommunications also provides the necessary assistance through IT staff.

The Council of Ministers approved the system of holding the incentives package for projects in the ICT sector, which was approved by the Board of Directors of the Investment Promotion Authority pursuant to the provisions of the Palestinian Investment Promotion Law No. (1) For the year 1998 and its amendments. A dynamic and attractive investment climate for foreign and expatriate investment and a boost for local investment in line with the strategic framework of the Palestinian Investment Promotion Authority, which operates under the umbrella of the National Policy Agenda 17-22 and responds to the requirements of local

development and global goals Sustainable Development 2030. It is worth noting that the incentive package covers the following¹²:

- 1. New projects are granted an income tax incentive at the rate of (0%) for a period of four years.
- 2. Existing projects that previously benefited from the incentives of the Investment Promotion Law are granted an income tax incentive at the rate of (0%) for a period of two years.
- 3. Existing projects that have not previously benefited from the incentives of the Investment Promotion Law are granted an income tax incentive at the rate of (0%) for a period of three years.
- 4. In cases where investors or companies contribute to funding research and development in information and communication technology in pioneering or new companies, universities or approved research centres, the value of this contribution shall be deducted from the profits subject to income tax, based on the Palestinian Investment Promotion Authority's approval of these contributions.
- 5. Projects that benefit from the incentive package contract system are treated as projects benefiting from the Investment Promotion Law in terms of customs incentives for equipment and production inputs.
- 6. Soft loans granted by financial institutions and banks to finance projects approved by the Authority are treated as loans granted to small and medium enterprises, in accordance with the provisions of the Income Tax Law and the regulations issued pursuant thereto.

It is worth mentioning that the provision of the aforementioned incentives will be linked to the number of workers to be added or maintained during the period of utilization

Furthermore, the Palestinian Information Technology Association (PITA) has announced the launch of an initiative to train and support 500 entrepreneurs over the next three years through which the government will invest in the technology sector to keep pace with the world.

PITA also announced the launch of another initiative, which is a partnership initiative between the companies of the Union of Information Systems and other economic sectors such as banks and large companies in Palestine to encourage these stakeholders to invest in the promising IT sector, especially that they invest little in this important and vital sector.

The big Palestinian companies and banks should be invited to invest in and cooperate with information systems companies and entrepreneurs to bring the world's technology to Palestine, where there is an excellent opportunity for Palestine to embrace the blockchain.

Compliance with international quality standards (such as the CMM, ISO) and International Trade Agreements are the main reasons why leading companies such as IDS, Oracle, 3COM and Temix have established branches in Palestine

Types of existing IT companies, include:

- Applied Software Companies.
- IT consulting services providers.
- Network Service Providers.
- Software companies and development solutions.
- Internet Service Providers.
- Providers of vocational and technical training.
- Suppliers of computer and Telecommunications equipment.

The privatization in the ICT sector in Palestine has been successful, where this experience has shown the ability of the Palestinian private sector to succeed and grow and develop. The following are important, relevant figures:

¹² <u>http://muqtafi.birzeit.edu/pg/getleg.asp?id=17034</u>

- 100% of the existing digital telecommunications infrastructure has been developed by the Palestinian private sector.
- Palestine has more than 250 companies specialized in information and telecommunications technology.
- The information technology sector contributes about 5-7% of the Palestinian GDP.
- The ICT sector in the Palestinian market is about \$ 600 million.
- More than three million mobile subscribers, more than 400,000 fixed line subscribers, 100 local radio and television stations, and 17 Telecommunications and Internet companies.
- There is no investment capital due to the political situation in Palestine.

The Palestine Investment Fund (PIF)¹³ aims at achieving maximum positive impact through investing in strategic projects in developing and vital sectors. Founded in 2003, PIF is a public shareholding company registered with the Ministry of National Economy. It focuses on investing in strategic sectors such as:

- the energy, both traditional and renewable
- agriculture
- health
- infrastructure (including telecom) and industrial zones, The PIF, in partnership with many local and international partners, implements a series of projects under this sector such as the Jericho Agro-Industrial Park, Tarqumia Industrial Park, Ooredoo Palestine, as well as other projects and investments.
- real estate
- Education
- SMEs & entrepreneurship,
- technology sector (including empowering start-ups and enriching Arabic digital content), PIF is a shareholder in the Ibtikar Fund, a \$10-million fund that invests in innovative Palestinian start-ups at early stages. Through its stake in Ibtikar, PIF seeks to empower start-ups and to strengthen the IT ecosystem sector in Palestine. Also, PIF is a shareholder in Play 3arabi, a mobile game publisher focused on Arabic mobile games. The company collaborates with international game developers to offer games in Arabic that are relevant to the Arab culture and to enrich the Arabic digital content.

B. Economic Impact of the ICT Sector

1. Contribution of ICT sector in the national economy

(Key indicators for telecommunication and information activities2010-2017								
	Value in thousand US dollars							
Economic Indicator	2010	2011	2012	2013	2014	2015*	2016*	2017*
Number of institutions	446.00	500	597	591	602	643	633	698
Number of employees	4,377.00	5,418	6,792	8,299	7,453	6,496	8,833	8,408
Compensation of employees	67,672.00	70,275.80	90,228.60	151,968.20	141,314.90	164,049.70	175,651.30	145,902.60

13 http://www.pif.ps/

Production	588,918.70	681,698.70	741,484.50	903,321.60	694,539.00	791,564.30	814,307.70	650,708.50
Intermediate consumption	62,063.80	88,455.50	110,665.50	164,632.70	188,706.50	155,738.70	166,771.40	130,065.30
Total value added	526,854.80	593,243.20	630,819.10	738,688.90	505,832.50	635,825.60	647,536.30	520,643.20
Gross fixed capital formation	98,574.80	79,361.30	64,662.10	45,330.80	59,152.50	98,696.40	137,852.80	97,422.80

* The data does not include that part of the governorate of Jerusalem, which was annexed by the Israeli occupation by force after the occupation of the West Bank in 1967.

Number of institutions and workers and the most important economic indicators for telecommunications and information activities in Palestine * 2017

Value in thousand US dollars								
The economic activity	Gross fixed capital formation	Gross value added	Intermediate consumption	Production	Compensation of employees	# of employees	# of institut ions	
Telecommuni cations and Information	97,422.8	520,643.2	130,065.3	650,708.5	145,902.6	8,408	698	
Publishing activities	9.3	2,303.6	578.0	2,881.6	1,471.4	277	30	
The activities of the production and dissemination of television, video, film, sound and music programs	112.2	2,705.5	1,162.7	3,868.2	1,629.3	302	52	
Program activities and broadcasting	255.0	10,754.3	3,852.4	14,606.7	10,129.1	1,125	87	
Telecommuni cations	96,628.6	465,233.3	120,330.4	585,563.7	115,081.4	4,780	345	
Computer programming activities, consultancy and related activities	417.3	33,761.2	2,941.7	36,702.9	13,813.0	1,443	146	
Information services activities	0.4	5,885.3	1,200.1	7,085.4	3,778.4	481	38	

* The data does not include that part of the governorate of Jerusalem, which was annexed by the Israeli occupation by force after the occupation of the West Bank in 1967.

The share of the ICT sector in GDP was 5.85%, 4.07% and 4.09% for the years 2014, 2015 and 2016 respectively.

ICT expenditures include:

- Building and developing infrastructure
- Update and upgrade equipment
- Training
- Operating expenses
- Purchase and develop software and applications
- Manage and develop websites and social networking sites

Regarding the determinants of the ICT contribution to growth in Palestine, it is worth mentioning that in education, Palestine still need more IT graduates, the country adopted means of digital education thought in order to build new, creative generations that can lead the future ad deliver the desired results. in the manufacturing sector, Palestine does not have a ICT industry, however it has made progress in software and applications development. Furthermore, the cost of ICT is very high compared to the economic situation in Palestine, which is due to the binding commitment to the Israeli economy. Moreover, investments are concentrated in the field of Telecommunications while investments in the field of information technology are very limited, especially international and foreign ones.

The following shows how ICT could contribute to the efficiency of growth in Palestine:

- In the field of social development at the level of education contributed to the improvement of educational attainment through the provision of computer labs connected to the Internet in schools and to enhance the skills of students and increase their culture presence of the Internet contributed to the participation in international scientific competitions.
- In the field of health, it is contributed to the development of medical services and the creation of a unified medical record and connect all hospitals and centers with each other.
- Contributed to the creation of jobs in the field of telecommunications and information technology and reduce the unemployment rate.
- Contribute to the reduction of environmental pollution.
- Economically contributed to the increase of income by 4%.

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

There is no available accurate statistics on the trade percentage of sales to various countries. the trade percentage of purchases from various countries received over the Internet or mobile network is over 50%.

3. E-business

Online banking services are available in Palestine. There is a growing need for the use of banking services to facilitate the purchase, sale and payment. Banks began to seek to provide these services to customers in accordance with the best modern means to meet the need of the community for such services.

As the banks need to develop banking and financial services in line with the great technological progress, banks have adopted the latest technologies to provide electronic banking services to their customers. In this context, the Monetary Authority has instructed all banks to provide Internet services and the SMS services free of charge to all its customers to allow them to regularly check their accounts and the relevant transactions for verification and review, if necessary.

Electronic payment systems are available in Palestine, but it cannot be confirmed whether these systems are adopting international standards of electronic commerce or not.

Laws/services	Available?	Law number	Year Passed
e-banking services	(yes)	9	2010
		16	2017
e-commerce law	(yes)	16	2017
Name other laws on e-services	Electronic Transaction		

4. Employment in the ICT sector

The small size of the economy, the Israeli-imposed restrictions on physical trade, and the large pool of talented youth make new technologies particularly beneficial for Palestine. Job opportunities for Palestinian youth would be greatly expanded by embracing and supporting the adoption of new technologies, and by undertaking policy reforms to seize the benefits of technological change for all youth.

Digital technologies provide a great opportunity to boost trade in services in Palestine. Data-based and technology-enabled services, such as ICT and business services, can get around physical transport restrictions and provide the Palestinian economy with a wider market, thus increasing employment opportunities. Furthermore, entrepreneurship culture is growing in Palestine, with the startup business ecosystem focused on ICT. The tech startup ecosystem is an early stage ecosystem, but it is still far from maturity. On average, each year, 19 more startups are created than in the previous year, resulting in a 34 percent compounded growth rate in startup creation since 2009. The growing global demand for ICT services, the digitally based trading of these services, and the good talent pool among Palestinian youth make early investors focus on digital entrepreneurs. A few high-growth companies, such as the online accommodation booking website 'Yamsafer,' are demonstrating that this is a potential career path for youth. Online freelancing also offers a great opportunity for Palestinian youth, particularly in Gaza. Digital technologies have enabled large projects awarded to firms in some part of the world to be broken down into small parts and tasks, which are outsourced to firms and individuals in other parts of the world. Tasks can be complex (e.g. software development, graphic design, media production, content development, website design, e-marketing, translation) or simple (e.g. labelling photos or videos, describing products, data gathering, answering calls), providing opportunities for high-skill and low-skill Palestinian youth alike¹⁴.

In a presentation by RTI International in March 2018, it was highlighted that the Palestinian labor market is only able to absorb 12,000 new entrants each year or 29% of graduates. It is estimated that over 3,000 graduates with ICT-related degrees (defined here as students with degrees in engineering or telecommunications) enter the job market annually, according to the Ministry of Higher Education in 2017. If leveraged correctly, this abundance of entry-level talent can play an important role in the expansion of the Palestinian ICT sector into new global markets for technology services¹⁵.

5. *E-employment*

¹⁴ <u>https://documents1.worldbank.org/curated/en/523241562095688030/pdf/West-Bank-and-Gaza-Jobs-in-West-Bank-and-Gaza-Project-Enhancing-Job-Opportunities-for-Palestinians.pdf</u>

¹⁵ <u>http://home.pita.ps/wp/the-palestinian-ict-sector-2</u>

ICT has become an essential tool effective and efficient selection processes of employees. It serves as enabler to outreach to a large and different talents the web, text messages and ads through social media platforms and professional networks, therefore it limited the role of job advertisements in the newspapers.

In the government sector, there is a special employment portal (https://www.gpc.pna.ps) belongs to the General Staff Office. This portal has a huge number of resumes as well as a bank of e-questions. The use of ICT tools in this regard ensures having impartial and transparent selection process. It also speeds up the selection process and reduce time and paper transactions.in the same connection, the Ministry of Labour created the portal of the Palestinian Labour Market Information System. The main objective of establishing this system is to create a dynamic information system for the labour market and the training system in Palestine. It also aims at providing accurate and up-to-date data and information on the supply and demand sides that help the decision maker, business owners and individuals in identifying the current and future needs of different skills and specializations, formulating the policies for the education, training appropriate to their capabilities and current and future labour market needs¹⁶.

There is an increasing number of teleworkers who work for international companies and enterprises; however, numbers are low in the local entities. Due to COVID-19 outbreak, A number of sectors/occupations have been minimally affected by the pandemic. This is partly due to the fact that workers in these sectors were able to work remotely, including through the internet and/or over the phones. The sectors where teleworking was possible during the pandemic and where workers continued to be paid include education, NGOs, international organizations, international government representatives and IT companies¹⁷.

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

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

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

Availability and Affordability:

Some public libraries upload books in PDF format on their website, and anyone can access the site free of charge and download the required book. There are also some digital libraries that offer their services online free of charge, such as electronic libraries for university students. There is an electronic library for students in every university in Palestine

Furthermore, Hope System¹⁸ is an application that serves people with hearing deficiencies, and serves normal people who contact with deaf, it makes contacting easier between them, and help integrating deaf in the community. Hope is available in Arabic and it is one of the first applications in addressing deaf people to

¹⁶ <u>http://www.lmis.pna.ps/AboutLMIS.aspx</u>

¹⁷ https://www.ilo.org/wcmsp5/groups/public/---arabstates/---ro-beirut/documents/publication/wcms_774731.pdf

¹⁸ <u>http://hope.developers.ps/Default</u>

facilitate dealing with them without prior knowledge about sign language. The application "Hope" converts text and sound into a sign language in which deaf people can interact with people constantly.

"Hope" offers a range of services for people with hearing disabilities, including social video service that seeks to integrate deaf people into the community, deaf newsletters, voice-to-speech and text-to-speech services, It is available on the Windows Store and Windows iPhone applications for \$ 3-5 per service. The application of "hope" was chosen more than 6 times as one of the most prominent applications in the Windows Phone Store. In addition, it was chosen the best pilot project in Palestine in 2014 and has the first place in the Imagine Cup, which is organized annually by Microsoft.

Means of Access - Availability of adequate access through various channels:

Access to the internet in the city of Ramallah¹⁹ and Al-Bireh²⁰ is free of charge for all citizens. Some ISPs offer internet services in the cities at a nominal price

With regard to internet access in public areas, the Municipality of Ramallah and the municipality of Al-Bireh transformed these cities into smart cities where access to the internet in all cities' facilities are free of charge.

Most of the rural areas have been connected to the internet free of charge by the Palestinian government. In addition, the Government is also seeking to extend the telephone lines to these areas to be fully covered by landlines.

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

No information available.

B. Capacity building on ICT4D/Digital Development

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

a. Basic literacy

The use of information technology to eradicate illiteracy in Palestine is done by classifying age groups and conducting study questionnaires identify the needs of each age group.

It is also carried out through programs/applications on smart phones that educate and explain the letters and numbers using the Arabic language.

b. Primary and secondary education

Palestine is in the process of moving from traditional education to e-learning through supporting schools with tablet devices and equipping them with the latest technologies. The curriculum includes a number of courses that are uploaded on the website of the Ministry of Education.

The Ministry of Education and Higher Education has implemented several projects that have contributed to the promotion of the adoption of ICTs in education, as follows:

• The Model Schools Network Project²¹, launched in 2007, it aimed to introduce measures to strengthen teaching, administration, community engagement, and the use of technology in 72 public

¹⁹ www.ramallah.ps

²⁰ www.al-bireh.ps

²¹ <u>https://www.amideast.org/news-resources/success-stories/12-years-of-reforming-education-in-palestine</u>

and private schools in the West Bank and Gaza. By introducing models of best practice for professional development, school-based management, and project-based learning, the program created a network of schools that would serve as "models" for reform in additional schools in the future.

- The Intel Tech Program²², which was launched in Palestine since October 2008, is a project to provide educators and ministry officials access to professional development training modules, curriculum materials and other resources that support 21st century skills in students and teachers.
- The project to promote e-learning in Palestinian schools, which is funded by the Belgian government project and is implemented in cooperation with the Palestinian government. It was launched in 2010. The project supports and develops learning and e-learning in primary schools. It aims to create an interactive environment among students, teachers and the community within and outside classrooms to equip students with critical, creative and problem-solving skills. Through the e-learning promotion project, the Ministry has been working on developing an educational portal that contains educational resources that will help teachers and teachers during their teaching tasks. Each teacher can participate in this portal.

Over the past years, the Ministry of Education and Higher Education has provided Internet lines to more than 1,000 public schools affiliated to the Education Directorate in Palestine.

In cooperation with the private sector, the Ministry has established a school portal to communicate with parents and enable them to be aware of their children's education in the school. The Ministry is currently training teachers on the effective use of e learning; a large number of teachers have been trained so far.

Each school has more than one fully equipped computer lab and the number of laboratories is consistent with the number of students in the school. PC penetration in school is one PC for each student.

Internet access to schools is through:

- ISPs.
- The government network by the Ministry of Telecommunications and Information Technology.
- Open educational portals that are available in Palestine

There is no distance education in Palestine through internet access except through international websites, some civil society organizations (such as Sharek Youth Forum) held several workshops on self-development, a number of which were offered free of charge. In Palestine, there is no Virtual schools

c. Higher education

The following Palestinian universities adopt modalities of e-learning²³:

- Al-Quds University (QU).
- Palestine Polytechnic University (PPU).
- Islamic University of Gaza (IUG).
- Birzeit University (BZU).
- An-Najah National University (NNU).
- Al-Quds Open University (QOU).

²² <u>https://gulfnews.com/technology/intel-seeks-to-boost-it-in-palestinian-schools-1.68908</u>

²³ https://www.researchgate.net/publication/274960328 Blended e-Learning Approach for Traditional Palestinian Universities

The libraries of e-content are available in state of Palestine. These digital libraries (DLs) are still in their infancy. The concept of DLs in local universities is still very limited to the reservation of some global database libraries without convenient and capable steps or moves to adopt modern techniques of education, especially those related to libraries that can both cope with and exploit the era of electronic services and finally allow the launch of such digital libraries²⁴.

To date, there is no accreditation of distance learning universities.

A number of universities in Palestine have established information technology units and centres of excellence aimed at providing specialized curricula, focusing on the important areas of the nascent Palestinian state. These units provide graduates with special needs for ministries, municipalities, Telecommunications companies. Moreover, persons with disabilities can use the websites of the University located in Palestine.

Training programs are available in universities, however the offered programs are not limited in number. These programs are provided by private companies or the government, and they are free of charge. On IT training in the curriculum, for example, Sun Microsystems donated labs to three Palestinian universities to train IT students.

d. Training and other forms of education

The Centre for Creativity and Excellence in the Ministry of Telecommunication and Information Technology contains 7 training rooms equipped with the latest equipment and one room equipped with Mac devices. The Centre provides these rooms free of charge to any government and private entities need to deliver training programs.

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

Civil servants

The General Directorate for Training and Development has a number of tasks covering the needs of IT workers as well as raising the level of current performance of staff to the required level. In addition, it designs programs and training systems that meet the needs of the employee and takes into account the use of modern technology to reach the best practices in the field of career development. This is done through the presence and operation of advanced training centers and the preparation of training courses in the field of information technology.

Women

In order to promote the current situation of women in technology, Palestine needs to improve the collection of the gender-disaggregated data systems in order to understand the basic issues that faces girls in the technology sector to clarify the relationship between the level of education and training of women in technology and its role in the labor market and the economy. Data that monitors women's participation in science and technology are available to some extent only in the public sector, yet it is almost not existent in the private sector.

Elderly

Adult education and training programs are provided mainly through cultural centers. The courses are offered in the fields of computer and commercial professions, in addition to courses in the fields of health, engineering, agriculture, journalism, electronics, mechanics and other disciplines.

²⁴ <u>https://www.researchgate.net/publication/281838709_The_Importance_of_Digital_Libraries_in_the_Palestinian_Universities</u>

C. ICT applications

1.E-Government

The Palestinian government is making great efforts to transform into an e-government and promote the relevant services through embedding ICTs in its tools and processes. In this regard, the Government succeeded to computerize all ministries. Moreover, some ministries turned into digitization, not only computerization, while some other ministries are in the process. In this regard, the Government take all necessary actions to adopt policies that promote citizen engagement and public services provision. In addition, the computerized the customs and taxation processes.

G2G (Government-to-Government) interaction between local and central governments

At present, the services provided by the General Directorate of e-Government are services between the ministries (intragovernmental). The next phase of the 2019 plan will include the provision of a number of services to citizens.

Palestine Data Exchange Framework - X-ROAD (The Interoperability Framework) X-road is a platform (collection of software and hardware) that facilitates the exchange of data between the databases and information systems of the different government institutions, through providing a secure channel for the provision of Government-to-Government (G2G) e-services and transactions.

The X-road platform was developed with the technical assistance and funding from the Estonian Government through EGA (E-Governance Academy of Estonia) between 2010 and 2015. Currently, the system is hosted at the Government Computer Centre; located at and operated by the Ministry of Telecommunication and Information Technology (MTIT).

So far, a total of 19 ministries are connected to the X-road. We have 38 services of these ministries are part of the G2G e-services that are implemented. Ministries and Government institutions that are not yet connected to the X-road can connect by sending a request to the MTIT. The MTIT specialized staff will accordingly install the main x-road components at the agency endpoint. Those components are; Security Server1, Adapter Server2 and MISP3. After installing the main components, the X-road central system and the certificate authority at the MTIT will ensure certifying the security server of the agency in order to become trusted by the other connected ministries/ institutions.

The connected ministry decides on who can access and read its data among the other connected institutions and what level of data can be accessed. This high level of access control and the architecture of the Public Key Infrastructure (PKI) make the X-road platform a highly secure and scalable platform.

G2C (Government-to-Citizen) delivery models and government portals

Between 2018 and 2020, the Government will provide 10 services to citizens.

<u>G2B</u> (Government-to-Business) interaction between local and central government and the commercial business sector

There is a plan to connect the private sector X-road and receive services from the ministries.

Name of Authority in Charge of ICT in Public	English Name: Ministry of Telecommunications and Information
Administrations	Technology
	وزارة الاتصالات وتكنولوجيا المعلومات :Arabic Name
	URL: www.mtit.pna.ps
Name of e-Government authority	English Name: General Directorate of e-Government
	الإدارة العامة للحكومة الالكترونية . Arabic Name

	URL: www.mtit.pna.ps
Number of implemented government e-services	38 services
Number of planned government e-services	<i>Implementing mobile application for iOS or Android contains 10 inquiry e-services</i>

URL of e-government portal: http://www.palestine.ps this site is not published yet. The e-government portal will be central for all government tenders in 2018

Information	General	Yes		
	Laws	Yes, e-Transaction law		
	Directories	Yes		
Services	Static Info	yes, Only for G2G in every agency		
	Downloadable Forms	Yes, all services can be found on http://palestinecabinet.gov.ps/GovService/		
	Interactive	No		
e-payment		No		
Online account		Yes, for services in some agencies		
Bilingual		The portal using Arabic language, but it is not published/not live to citizens yet		
Citizon Derticipation	Blogs	No		
Citizen Participation	Polls	No		
	Facebook	No		
	Twitter	No		
Social Media	LinkedIn	No		
	YouTube	No		
	Other	No		
Additional	RSS	Yes		
Additional	Web Statistics	Yes, not for public use		
Services	Search	Yes		
	Support for smartphone/tablet	Yes		
Mobile version	Dedicated App (iOS or Android based)	Yes		
Other features				

2. E-health

There are some licensed and paid research databases offered to the care providers, researcher and decision makers. One of this research databases in Hinari Programme²⁵ that was set up by WHO together with major publishers to enable low- and middle- income countries to gain access to one of the world's largest collections of biomedical and health literature. Up to 21,000 journals, up to 69,000 e-books, up to 115 other information resources are now available to health institutions benefiting many thousands of health workers and researchers, and in turn, contributing to improve world health.

In addition, the national programmes that address and promote sexual and reproductive health is called the Maternal and Child Health (MCH) eRegistry. The MCH eRegistry²⁶ is designed to increase the availability and timely use of routine maternal and child health data, as data is consistently captured and the eRegistry is strategically designed to inform decision-making. It therefore enables care providers to perform interventions based on the client's actual health needs and allow for better-informed planning. Thus, it serves the dual purpose of patient management and public health monitoring.

The Palestinian National Institute of Public Health (PNIPH)/WHO is, in close collaboration with the Ministry of Health (MoH) in Palestine, is rolls out a nationwide MCH eRegistry. The national implementation of the MCH eRegistry includes cluster randomized controlled trials led by the Norwegian Institute of Public Health. The MCH eRegistry has been implemented in 182 governmental primary care clinics in Palestine²⁷.

Currently, a Picture Archiving and Communication System (PACS) is implemented in governmental hospitals that covers all medical images that can be accessed by authorized credentials from anywhere in the world., which promotes the use of telemedicine and make it more efficient.

There are several electronic systems and application that are used in health care management in hospitals and primary health care settings. There are two major robust electronic information applications i.e. AVICENNA and DHIS2 platforms. Several health services and procedures are totally digitized i.e. pharmacy, laboratory, patient records, etc.

Currently, MoH with cooperation with PNIPH are working to develop case-based surveillance to track and monitor the communicable disease.

From what it mentioned above, it can be highlighted that there are major success stories with regard to the implementation on the national level, such as hospital electronic information system where there are 12 public hospitals are totally digitized. Currently, there is more than 1.5 million unique records in the national system where the system is functioning 24/7. Another example is the MCH eRegistry, which is implemented in more than 180 clinics and expected to cover all the scattered clinics in west Bank and Gaza by the end of 2019.

²⁵ <u>https://www.who.int/hinari/en/</u>

²⁶ <u>https://www.uib.no/en/cismac/117179/eregistry-support</u>

²⁷ https://www.thelancet.com/action/showPdf?pii=S0140-6736%2819%2930616-6

V. Cluster Five: Culture and Media Policy Areas

A. Cultural identity and linguistic diversity

Information technology has entered all occupations of the society in general, and the of individual's in particular, which facilitates the communicate with people of other nationalities, which helped improving the use of English language and other language for the Palestinians while communicating with other nationalities over the internet.

A museum dedicated to the life of the late President Yasser Arafat was created, and the Palestinian Museum was established to chronicle the daily life of the Palestinian people.

The Palestinian Museum in the West Bank town of Birzeit announced on February 18, 2018, that the Digital Archive Project as the largest and the first of its kind in Palestine. The project will be operational and will run for three years with funding of \$1.9 million from the Arcadia Fund. The project will aim to collect the largest number of documents and images (daily life, personal lives, official documents, official agreements, artistic and literary works) for electronic preservation as a kind of documentation of social, political and cultural life.

B. Media

1. Media diversity, independence and pluralism

The media in Palestine varies between the audio-visual and the print media, some of which are owned by the government and others by the private sector, of course, after obtaining the necessary licenses.

Media outlets	Language(s) Ownership				
	2	Private	Mixed	Government	Foreign
Newspapers	Arabic	110		2	
Electronic newspapers	Arabic				
Magazines	Arabic / English	220		5	
News agency	Arabic / English	31	Mixed	1	7
Radio stations	Arabic	58	Mixed	1	
Television stations	Arabic / English	4	Mixed	1	

The government supports media institutions and reports through providing training course to develop local journalists' capabilities. Also, the government works with pertinent stakeholders such as the Palestinian journalists syndicate to document Israeli violence against journalists and media outlets to support and advocate for their causes legally and before international bodies.

Legislations governing the media sector:

- The Palestinian basic law.
- The press and publications law of 1995 and draft law on the press and publications 2017.
- Law no. 3 of 1996 on Telecommunications.
- Legislative decree No. 15 of 2009 concerning the Palestinian regulatory authority for the Telecommunications sector.
- Legislative decree No. 16 of 2017 concerning electronic crimes.

- Draft law on Right to Access Information Law.
- Draft law on Audio-Visual Media.

The media, whether owned by the government or the private sector, is the fourth power in Palestine that leads to change in public opinion and legislations making in Palestine. Laws and government strategies enhance and support journalists access to information that is guaranteed by the press and publication Law of 1995 and the freedom to establish media outlets and broadcast that will be guaranteed by the publication and press law that is in the making process.

Palestinian ministries and government bodies encourage the investigative reports, which is a major tool to identify and discuss issues of corruption.

Female journalists registered at the Palestinian journalists' syndicate constitute 25% of the total registered journalists in Palestine.

The Ministry of Information has worked thoroughly to mainstream gender approach. It has issued a circular ordering the local TV and radio stations to appoint male and female journalists equally. Also, it organized a conference to discuss unemployment and gender among graduate journalists and is working on strategic and legal incorporation of the recommendations. Almost 40% of the employees at the Ministry are females.

2. The media and its role in the Information Society

Media is used by the ministries and bodies of the Palestinian state to spread awareness, government achievements and propaganda. Also, media acts as a watchdog to protect public interest against malpractice and create public awareness.

The state of Palestine is ready to support media-based programs in local communities and support projects combining the use of traditional media and new technologies for their role in preserving local heritage, support diversity and mirroring the Israeli occupation atrocities to rural and Bedouin areas in Palestine. It also encourages traditional media as a mean to reach rural, isolated and nomadic communities and enable them voice up their needs and achievements.

The Ministry of Information has encouraged licensing local TV and radio stations in rural areas, known as area C According to Oslo Agreements. It has further worked on supporting the establishment of community radios.

3. Convergence between ICT and the media

Over the last decade, the ICT sector in Palestine has shown continuous growth in products and services provided to businesses, government, and households. The usage of internet has shown tremendous growth during the last few years reflecting actual and potential additional investment opportunities within the sector. The Ministry of Information has been working on convergence of radio frequencies. The political situation and being under occupation has deterred convergence. As a result, all local TV and Radio stations turned into IPTV. Media production and satellite services providers are turning to TVU's.

4. Social Media in the Arab World

Social media plays an important role in creating a knowledge-based society. It helps shaping public opinion and strengthening the society. However, it still can be used as a double-edged sword by individuals, organizations and governments to spread rumours and misinformation as well as in the online recruitment of terrorists. Social Media helps in reaching and getting in contact with more people and users, it also challenges the traditional ways of searching and accessing information. Social media became where Many debates and exchanges of knowledge take place and opinions are formed.

Appendix 1

Table 1 - Core indicators on the ICT (producing) sector

Core i	ndicator	Definitions and notes	2015	2016	2017
ICT1	Proportion of total business sector workforce involved in the ICT sector (expressed as a percentage)	<i>ICT workforce</i> (or ICT employment) consists of those persons employed in businesses that are classified as belonging to the ICT sector. <i>Total business workforce</i> represents all persons engaged in domestic production in the business sector. In a national accounts framework, employment can be measured in terms of headcounts, jobs, full-time equivalents (FTE) or hours worked. For countries using ISIC Rev. 3/Rev 3.1 (or national equivalents), the ICT sector is defined per the OECD's 2002 definition. This can be found in Box 1 and is discussed in detail in OECD (2007).	6,496	6,861	7,709
		For countries using ISIC Rev. 4 (or national equivalents), the ICT sector is defined per the OECD's 2007 definition. This can be found in Box 2 and is discussed in detail in OECD (2007).			
		The total business sector is defined on an activity (industry) basis per ISIC Rev. 3.1 as divisions 10–67 and 71–74. It therefore excludes: agriculture, hunting, forestry and fishing; real estate activities (because a significant proportion of the value added of the latter consists of imputed rent of owner-occupied dwellings); and, community, social and personal services (which consists mainly of non-market activities such as public administration, education and health services).			
		For countries using ISIC Rev. 4, the total business sector is not so easily defined. It will most likely include the equivalent divisions 05 to 36, 41-66, 69-82 and 95. Discussions are ongoing on whether it should include some industries that were not included in the Rev. 3.1 definition of the total business sector (divisions 37-39, 90-93 and 96). ²⁸			
ICT2	ICT sector share of gross value added (expressed as a percentage of total business sector gross value added).	<i>Gross value added</i> for a particular industry represents its contribution to national GDP. It is sometimes referred to as GDP by industry and is not directly measured (but is estimated in a national accounts framework). In general, it is calculated as the difference between production (gross output) and intermediate inputs (the energy, materials and services required to produce final output). Definitions of the ICT and total business sector are per ICT1.	436.9	542.1	613.5

²⁸ See draft ISIC Rev. 4: <u>http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=27</u>.

Core indicator Definitions		Definitions and notes	2015	2016	2017
ICT3	ICT goods imports as a percentage of total imports	<i>ICT goods</i> are defined per the OECD's 2003 ICT goods classification, based on the 1996 and 2002 Harmonized System classification. It can be found in UNCTAD (2007).	111.840.000	62.875.000	none
		e.g. re-exports and re-imports are not netted out, and data are presented in US dollars (converted by the UN from country currencies).			
ICT4	ICT goods exports as a percentage of total exports	<i>ICT goods</i> are defined per the OECD's 2003 ICT goods classification, based on the 1996 and 2002 Harmonized System classification. It can be found in UNCTAD (2007).	3.673.000	3.303000	none
		Other concepts are per the <i>UN COMTRADE</i> database e.g. re-exports and re-imports are not netted out, and data are presented in US dollars (converted by the UN from country currencies).			

Table 2 – Core indicators on international trade in ICT goods

Table 3 - Core indicators on ICT in education

Core ind	icator	Definitions and notes	2015	2016	2017
ED1	Proportion of schools with a radio used for educational purposes (by ISCED level 1 to 3)	Schools offering radio-based education as a percentage of the total number of schools in the country for each ISCED level (1- 3).		96.5%	96%
ED2	Proportion of schools with a TV used for educational purposes (by ISCED level 1 to 3)	Schools offering television-based education as a percentage of the total number of schools in the country for each ISCED level (1- 3).		81%	81.5%
ED3	Proportion of schools with a telephone telecommunication facility (by ISCED level 1 to 3)	Schools with telephone telecommunication facilities as a percentage of the total number of schools in the country for each ISCED level (1-3). Note that the facility should be directly associated with the school. For instance, a mobile phone which is owned by an individual working at the school would not constitute a school <i>telephone</i> <i>telecommunication facility</i> .		95%	95%
ED4	Student-to-computer ratio (by ISCED level 1 to 3)	Average number of students per computer in schools that offer computer-assisted instruction (CAI) by each ISCED level (1-3).		27.0	26.0
ED5	Proportion of schools with Internet access, by type (by ISCED level 1 to 3)	Schools with access to the Internet as a percentage of the total number		36.5%	37.3%

Core ind	icator	Definitions and notes	2015	2016	2017
		of schools in the country for each ISCED level (1-3).			
ED6	Proportion of students who have access to the Internet at school (by ISCED level 1 to 3)	Total number of students with access to the Internet in schools as percentage of the total number of students in schools offering internet-assisted instruction in a given country by each ISCED level (1-3).		32%	31%
ED7	Proportion of students enrolled by gender at the tertiary level in ICT- related fields (for ISCED levels 5 and 6)	Number of students currently admitted in ICT-related fields ²⁹ by gender as a percentage of all students enrolled in educational institutions in a given country by gender for ISCED levels 5 and 6 (combined).		Higher Education Does not exist	Higher Education Does not exist
ED8	Proportion of ICT-qualified teachers in primary and secondary schools	Number of primary and secondary teachers who have received ICT training, expressed as a percentage of the total number of teachers at these levels of education.		Supervision/i nstitute	Supervision/i nstitute
Referenc	Reference indicator				
EDR1	Proportion of schools with electricity (by ISCED level 1 to 3) ³⁰	Schools with electricity as a percentage of the total number of schools in the country for each ISCED level (1-3).		100%	100%

²⁹ ICT-related fields include computer science, computer engineering, information and telecommunication technology, information systems, multimedia systems, ICT management, system support and software development, informatics, etc. These are represented by ISCED97 Fields of Study 48-Computing, together with elements of 21-Arts (audio-visual, media production and design) and 52-Engineering (electronics and automation). These fields involve substantial work in understanding the technical aspects of ICT rather than a more generic or basic use of ICT.

³⁰ Since electricity is not specifically an ICT commodity, but an important prerequisite for using many ICTs, it is not included in the core list, but included as a reference indicator. International studies reviewed by UIS revealed that the lack of electricity is such a significant barrier in many developing economies that monitoring trends of its provision is as relevant as monitoring the supply and use of ICT.

Table 4 - Core indicators on ICT in government

Core indicator I		Definitions and notes	2015	2016	2017
EG1	Proportion of persons employed in central government organizations routinely using computers	The proportion of persons employed in central government organizations routinely using computers is calculated by dividing the number of persons employed in central government organizations, who routinely use computers, by the total number of persons employed in central government organizations. The result is then multiplied by 100 to be expressed as a percentage. An optional indicator may be calculated separately for male and female persons employed (or other individual characteristics).	90%	90%	95%
EG2	Proportion of persons employed in central government organizations routinely using the Internet	The proportion of persons employed in central government organizations routinely using the Internet is calculated by dividing the number of persons employed by central government organizations, who routinely use the Internet, by the number of persons employed by central government organizations. The result is then multiplied by 100 to be expressed as a percentage. An optional indicator may be calculated separately for male and female persons employed (or other individual characteristics).	90%	90%	95%
EG3	Proportion of central government organizations with a Local Area Network (LAN)	The proportion of central government organizations with a Local Area Network (LAN) is calculated by dividing the number of central government organizations with a LAN by the number of central government organizations. The result is then multiplied by 100 to be expressed as a percentage.	70 %	81 %	93%
EG4	Proportion of central government organizations with an intranet	The proportion of central government organizations with an intranet is calculated by dividing the number of central government organizations with an intranet by the number of central government organizations. The result is then multiplied by 100 to be expressed as a percentage.	89%	93%	100 %
EG5	Proportion of central government organizations with Internet access, by type of access	The proportion of government organizations with Internet access, by type of access is calculated by dividing the total number of central government organizations with Internet access (by each type of access and 'any' access) by the total number of central government organizations. The result is then multiplied by 100 to be expressed as a percentage. Note that the sum of percentages of each type of access is likely to exceed 100, as many central government organizations will have more than one type of access service.	90%	92%	96%

Core indicator		Definitions and notes	2015	2016	2017
EG6	Proportion of central government organizations with a web presence	The proportion of central government organizations with a web presence is calculated by dividing the number of central government organizations with a web presence by the number of central government organizations. The result is then multiplied by 100 to be expressed as a percentage.	100 %	100 %	100 %
EG7	Selected Internet-based services available to citizens, by level of sophistication of service	Unlike indicators EG1 to EG6, this indicator refers to both central and state/provincial levels of government. This is necessary to ensure international comparability as the services selected may be offered by different levels of government across countries. Because the approach taken to measuring Internet-based services is relatively untested5 and because responses may be somewhat subjective, the indicator is initially considered to be 'experimental'. The indicator is weighted by population in order to show the significance of government Internet-based services at the national level. The indicator is expressed in terms of the percentage of a country's population that is theoretically able to access each Internet-based service. Note that this does not refer to whether a citizen has the equipment or knowledge necessary to access those services, whether s/he directly benefits (for example, most of the services are not relevant to children). The ability to access each service will usually be linked to the relevant jurisdiction, for example, a citizen residing in a particular state will theoretically be able to access Internet-based services offered by that state government, though may not need to, wish to, or be technically capable of doing so.	No services only query about the service and its requireme nts at the site for the citizen or in the smartphon e application	No services only query about the service and its requireme nts at the site for the citizen or in the smartphon e application	No services only query about the service and its requiremen ts at the site for the citizen or in the smartphon e application