THE WORLD BANK GROUP

Telecommunication Sector Note in the Palestinian Territories: Missed Opportunity for Economic Development

Note for the Palestinian Ministry of Telecommunications and Information Technology

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Acronyms

2G	Second-generation mobile network or service
3G	Third-generation mobile network or service
4G	Fourth-generation mobile network or service (also known as “LTE”)
ADSL	Asymmetric Digital Subscriber Line
AREGNET	Arab Regulators Network
COGAT	Coordinator of Government Activities in the Territories
EC	European Commission
GSM	Global System for Mobile Communication
GSMA	GSM Association
ICT	Information and Communication Technologies
IGW	International Gateway
ISP	Internet Service Provider
ITU	International Telecommunications Union
JDECO	Jerusalem District Electric Company
LAN	Local Area Network
LTE	Long-Term Evolution of mobile network or service (also known as “4G”)
MENA	Middle-East North Africa
MoC	Israeli Ministry of Communications
MTIT	Palestinian Ministry of Telecommunications and Information Technology
MNO	Mobile Network Operator
NRA	National Regulatory Authority
PA	Palestinian Authority
PNINA	Palestinian National Internet Naming Authority
PSTN	Public Switch Telephone Network
PTRA	Palestinian Telecommunications Regulatory Authority
RIO	Reference Interconnection Offer
SIM	Subscriber Identity Module (better known as “SIM card”)
SMP	Significant Market Power
VAT	Value Added Tax
WB&G	West Bank and Gaza

1 Executive summary

The Telecommunications Sector Assessment Note in the Palestinian territories is a knowledge product prepared by the World Bank in response to a specific request from the Palestinian Ministry of Telecommunications and Information Technology (MTIT) to assess the performance of the telecommunications sector, identify specific issues and make recommendations for further development and reform.

MAIN FINDINGS

The Oslo framework, the reference agreement between the Israeli and Palestinian counterparts to support economic development and stability in key economic sectors, has failed to deliver its promise of an independent telecommunications sector in the Palestinian territories. According to the principles of the Oslo Agreement, "*Israel recognizes that the Palestinian side has the right to build and operate separate and independent communication systems and infrastructures including telecommunication networks, a television network and a radio network*." Several resolutions of the International Telecommunications Union[1] confirm the right of the Palestinian people to have access to an independent telecommunications network.

The principles of the Oslo agreement with respect to the telecom sector remain valid. However, its provisions are not applied. This is presenting enormous challenges for Palestinian telecom operators, a clear detriment to the Palestinian consumer, a fiscal loss for the Palestinian Authority, and an overall delay for sector development. The Joint Technical Committee (JTC) under Oslo, intended to be a regular, technical (non-political) platform to address bilateral issues, has shown inadequate and ineffective performance, and progress since 2008 on bilateral issues has been limited:

- The lack of spectrum is a significant constraint to the development of the industry; in late November 2015, an agreement for a limited release of frequencies to Palestinian operators to launch 3G services has been signed. If implemented, the agreement would finally allow Palestinian operators to introduce mobile broadband using 3G, about eight years after their initial request. The agreement would still place the Palestinian operators at a competitive disadvantage, as Israeli operators have 3G and 4G capabilities and are able to attract higher value customers. As the MENA region is moving towards 4G, the recent agreement on the release of frequencies can hardly be celebrated as a success – although it does represent a first step forward. Combined with other restrictions, the delay in mobile broadband negatively affects Internet development.
- The second mobile operator (Wataniya) cannot fully play its competitive role for the mobile market. Its operations in the West Bank suffered a two-year delay due to Israeli restrictions on releasing the spectrum. The situation for Gaza consumers is worse as Wataniya still cannot start its operations due to restrictions on accessing spectrum and importing civil material[2].
- The presence of widespread, unauthorized activity by Israeli operators in the West Bank with mobile broadband capabilities (Israeli operators have 3G capabilities since 2004 and 4G since 2015) has the effect of creating unfair competition at the expense of Palestinian operators which

[1] Cf. the following ITU resolutions: Resolutions 99 and 125 from the Plenipotentiary Conference PP-14, Resolution 18 from the World Telecommunication Development Conference WTDC-14, Resolution 12 from the World Radio Communication Conference WRC-12.

[2] This has also impacted Wataniya's business plan which has an open claim against the Palestinian Authority, asking for part of its license proceeds to be waived given the limited deployment of its operations compared to the rights under its license.

cannot even deliver 3G services. Depending on sources, Israeli operators may currently capture up to 30% of the West Bank market in volume – i.e. number of subscribers. The Israeli market share in value – i.e. measured by the total sales – is even higher as Israeli operators capture high value-added Palestinian customers by providing 3G and 4G.

Other constraints have a negative impact on sector performance, including (i) restrictions on the import of equipment for telecom and ICT companies, (ii) restriction of movement of goods and people within Area C that impedes the deployment and maintenance of infrastructure, and (iii) the requirement by Israel that Palestinian operators go through an Israeli-registered company to access international links.

Some domestic regulatory and competition issues persist, chief among them the strengthening of the regulatory framework with – ideally – the creation of an independent regulatory agency. They still present an important reason in addition to unilateral and bilateral issues for inadequate sector performance. However, some achievements are substantial when compared with other countries in MENA that have yet to introduce similar reforms, and compared to the situation in 2008.

- With the issue of a second mobile license (to operator Wataniya) the authorities have introduced a mobile-focused competitor enjoying *de jure* rights on equal footing with incumbent operator Paltel. Paltel and Wataniya are robust companies, with deep know-how in the sector, technology proficiency, excellent commercial skills and solid investors. These companies are essential assets for the economic development of the Palestinian territories. If unilateral and bilateral constraints are alleviated, chief among them the release by Israeli operators of spectrum for 3G and 4G and the lifting of Israeli restrictions on the import of equipment for Wataniya in Gaza, they could make a substantial contribution to the development of the Palestinian Territories.
- The Palestinian authorities allow facilities-based ISPs, wherein a local ISP can acquire a broadband license and become a broadband operator. As a result, local entrepreneurs can acquire rights and directly invest in the development of broadband infrastructure at access level. This has been a factor of success for the development of broadband in other emerging regions, especially in Eastern Europe. Few countries in MENA have adopted this liberal approach, which is the norm in Europe and other regions. This achievement is noteworthy.
- Palestinian ISPs with a broadband license can use alternative infrastructure built by non-telecommunications operators, in accordance to the law and relevant regulations. For example, the fiber optics infrastructure of JDECO, a Jerusalem utility company, is used by at least one ISP. JDECO may be willing to lease infrastructure to other operators.
- MTIT has also introduced competition in the VoIP and WiFi markets by introducing new licenses.

For the introduction of competition through the award of mobile and broadband licenses to be successful for the Palestinian territories, the overall domestic regulatory framework needs to be strengthened. Despite the achievements mentioned above, there is still the critical need to issue regulations to tackle the dominant position of Paltel in selected segments, and of unauthorized Israeli operators. There is an active and pressing debate on the need of a new law, and on the introduction of an independent regulator. The introduction of an independent regulatory authority reflects good international practice and should be considered as a priority.

Regardless of the timing of the creation of an independent regulator, however, the regulatory framework is lacking a minimum regulatory package of key regulations that support competition in in advanced markets. For example, the regulatory framework should be strengthened through a package of regulations to address dominance and potential anti-competitive risks such as (i) limited access to essential

infrastructures in the fixed broadband market, (ii) on-net / off-net price differentiation in the mobile market, and (iii) fixed and mobile cross-subsidizing.

There are specific, additional issues of regulatory and institutional uncertainty in Gaza, preventing the development of the telecom sector:

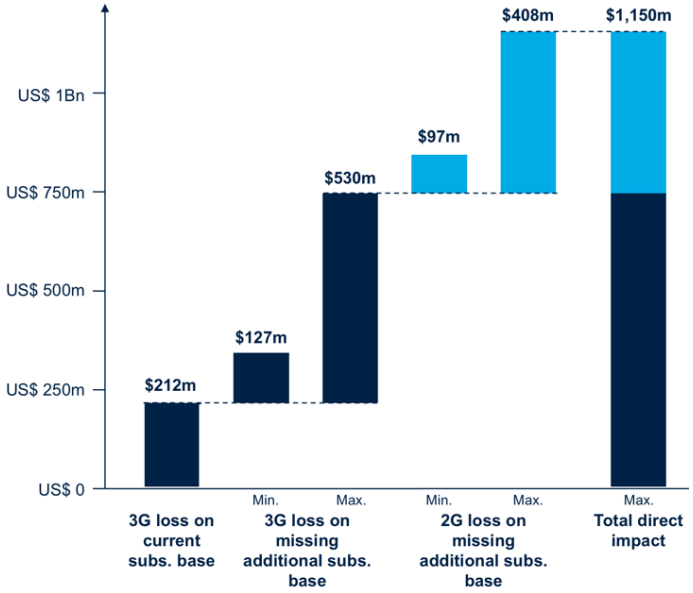
- Any company applying for a telecom license in the West Bank must go again through a whole new licensing process in Gaza. This generates inefficiencies and costs.
- Several counterparts mentioned that Gaza authorities are levying tax on telecom companies. While the principle of taxing telecom companies can be legitimate, any fiscal revenues should be managed directly by the PA or by a dedicated fund such as a Universal Service Access fund.
- MTIT does not have control over the Palestinian National Internet Naming Authority (PNINA) – and more specifically over the PNINA servers – which is located in Gaza is the official domain registry for the Palestinian country code Top-Level-Domain (".ps"). While the absence of MTIT control over PNINA does not currently prevent Palestinian companies to register and operate a website, MTIT should have control over this Authority.

The impact of unilateral and bilateral issues as well as domestic issues on the performance of the telecommunications sector is compelling:

- The price of fixed and mobile services is still high, and mobile data is particularly expensive, especially compared with the offers of unauthorized Israeli operators.
- A high-level, possibly conservative estimation of the foregone value due to lasting effects of unilateral and bilateral issues as well as domestic issues is provided based on a benchmarking with peer markets. **The total revenue loss for the Palestinian mobile sector during the last three years (2013-2015) ranges from US$ 436 to 1,150 million.** The revenue loss directly attributable to the absence of 3G is between US$ 339 and 742 million and the total 2013-2015 Value Added Tax fiscal loss for the Palestinian Authority is between US$ 70 and US$ 184 million[3]. The direct impact represents up to 3.0% of the GDP over the last three years.

[3] Additional fiscal revenues are not estimated in this Note such as corporate taxes.

Figure 1: Total revenue loss over the last three years (2013-2015) for Palestinian mobile operators due to the absence of 3G and other bilateral and domestic issues



Source: World Bank calculation

In short, compared to the 2008 situation assessed in the World Bank Telecommunications Sector Note (World Bank, 2008), there has been very limited progress on the bilateral side and noticeable progress on the domestic side. On the bilateral side, spectrum issues emerged as the most important bottleneck for the sector, in the context of an industry that has strongly evolved towards the use of radio resources for data communications. The creation of an independent regulator remains the most important domestic priority, but in some areas (sector liberalization, liberal licensing regime), the authorities have taken positive steps that most countries in the region have still to embrace. Most of the issues identified in the current Note were already mentioned one way or another in 2008, and a high-level assessment of the progress achieved during the last 7 years is provided in the table below.

Table 1: High-level summary of progress and stagnation since 2008

Main issues (2008)	2008 situation	2015 progress
Unauthorized competition and technical coordination	○ Dysfunctional JTC ○ Israeli restrictions on spectrum release and no 3G services ○ Unauthorized competition by Israeli operators ○ Israeli restrictions to import civil and ICT material across borders (especially in Gaza)	○ Dysfunctional JTC ○ Little progress on spectrum (release of 2G spectrum for a 2nd operator in the West Bank). The release of 3G spectrum has been delayed, placing unauthorized mobile Israeli services at a clear advantage. ○ Still unauthorized competition by Israeli operators; data suggests that their market share has diminished but could rise again as they are able to provide 3G and 4G services and data packages that cannot be matched by Palestinian operators. The presence of aggressive data packages from Israeli operators may also prove to be a competitive challenge for DSL offer. ○ Israeli restrictions to import civil and ICT material across borders (especially in Gaza); difficulties to obtain permits to operate in Area C (infrastructure deployment and maintenance). ○ Restriction on access to international links (possible only through an Israeli-registered company).

Main issues (2008)	2008 situation	2015 progress
Weak Sector Institutional and Regulatory Capacity	○ No independent regulator ○ MTIT is resource constrained ○ Tax collection to be improved ○ Transparency and governance to be enhanced	○ Still no independent regulatory agency. ○ Improvements on the policy side but incomplete implementation (no regulatory authority): • 2009: a Telecommunications Law was approved; the 2009 Law provides for the creation of the Palestinian Telecommunications Regulatory Authority (PTRA) • 2010: MTIT published a Statement of National Telecommunications Policy • 2014: MTIT published its ICT Strategy
Promotion of new entrants	○ High entry barriers for new entrants, no competition in mobile	○ Substantial progress for the mobile market: i) a second operator (Wataniya) launched operations in Q4 2009 but still cannot operate in Gaza; ii) MTR decrease based on LRIC model ○ Substantial progress for the fixed market: i) introduction of liberal ISP licensing regime; ii) a form of bitstream access is available; iii) possible access to alternative infrastructure, iv) FTR decrease based on LRIC model
Market dominance	○ Operator dominance (single mobile operator Paltel-Jawwal and dominant ISP Paltel-Hadara)	○ Regulatory framework needs to be strengthened: i) framework to deal with significant concerns by telecom challengers and new entrants regarding dominance of Paltel; ii) no Number Mobile Portability; iii) RIOs to access Paltel's infrastructure

RECOMMENDATIONS ON BILATERAL ISSUES

Revive the JTC platform to address bilateral issues. Specific areas of focus include a **comprehensive and long-term agreement on spectrum**, beyond the current agreement on 3G, and including 4G spectrum as well as spectrum for network backhauling and other wireless broadband access technologies, ensuring the Palestinian operators the right to develop independent, facilities-based, networks, and, if they wish, accessing shared passive infrastructure facilities.

Review the mechanisms for the functioning of the JTC to ensure greater trust, efficiency and openness. Some suggestions to explore include:

- A commitment to meet on a scheduled and regular basis whatever the political context on both sides;
- The inclusion of a trusted and independent third party with legal and technical expertise to review requests and proposals from both side and provide suggestions where relevant;
- The commitment to i) not disclose sensitive or preliminary proposal and information; ii) and conversely to publish public reports and updates on the work and progress of the JTC.

Release 3G and 4G spectrum. Competition in the mobile market has been the driver of mobile market growth and innovation in all markets, including in distressed, post conflict environments, and releasing additional spectrum would provide benefits to Palestinian residential and corporate end-users. Leaving a mobile-monopoly market structure in Gaza is unhealthy for competition and Gaza consumers. The absence of 3G/4G spectrum assigned to Palestinian operators is also hurting Palestinian consumers. The Israeli authorities have provided a proposal to allocate dedicated spectrum to the Palestinian operators, as well as spectrum on a shared principle on the 2100MHz band. A full allocation of spectrum resources, beyond the 3G spectrum, should be negotiated.

Lift Israeli constraints on the layout of microwave links and the import of civil and telecom material – particularly in Gaza. Some options include:

- Streamlining the administrative procedure for security clearance with stable, objective, transparent and non-discriminatory criteria to be fulfilled;
- Palestinian telecom and ICT companies providing all the needed clearance forms and proofs;
- Israeli authorities monitoring the use of civil and telecom material– particularly in Gaza – with the possible involvement of a trusted third-party performing a detailed audit on a regular basis to ensure all security concerns are dealt with.

Mitigate the effect of unauthorized telecom activity. The issue of unauthorized Israeli telecom activity in the West Bank has been present through the implementation of the Oslo agreement. Two measures can address this issue:

- Palestinian operators should be able to access similar resources as Israeli operators, in order to be on the same competition ground. This includes accessing sufficient spectrum to deploy independent 3G and 4G/LTE systems (which can be shared with Israeli operators on a voluntary basis); this is a top priority for action;
- An ideal cooperation between Israeli and Palestinian authorities would limit the coverage of Israeli operators in the West Bank. This includes the review of telecom equipment deployed (e.g. micro-cells with a smaller coverage radius can limit the coverage compared to macro-cells)[4]. However, the track record (especially of the JTC) suggests skepticism as to the reach of a solution to limit coverage.

RECOMMENDATIONS ON DOMESTIC REGULATORY AND COMPETITION ISSUES

Create an independent regulator. The creation of an independent regulator (PTRA) is the top domestic priority, with the setting up of a regulatory framework in line with international best practices. The regulatory framework shall ensure an objective, transparent and non-discriminatory approach with the industry, supported by openness and public consultations.

Implement the telecom law. The Note also urges that Palestinian counterparts to implement the existing law without delay, or introduce amendments to ensure it is consistent with global best practices.

Resolve several legal and institutional issues affecting the sector with a minimum regulatory package, including:

- The monitoring of the market with the institution of an ICT observatory.
- The introduction and enhancement of regulatory tools such as market observatory, market definition, identification of Significant Market Power (SMP), remedies definition and enforcements, monitoring and sanctions;
- The enforcement of Reference Interconnection Offers (RIOs) to provide a more dynamic, transparent non-discriminatory and cost oriented wholesale market;
- The assistance in the setting-up of an *ex post* competition department or authority (to complement the *ex ante* regulatory approach) to monitor and approve potential mergers and prevent potential anti-competitive behaviors.

Enhance capacity and skills. The legitimacy and efficiency of MTIT and the to-be-created PTRA must be supported by the continuing recruitment of skilled workers to keep up with market developments and

[4] Although the economic impact is marginal, Palestinian operators should also limit their signal reach within Israeli territory.

complex regulatory tools. This remains a challenge as the labor market is small and the salaries in the public sector are lower than in the private sector.

2 Introduction

The Palestinian Telecommunications Sector Assessment Note is a knowledge product prepared by the World Bank in response to a specific request from the Palestinian authorities to assess the performance of the telecommunications sector in the Palestinian territories, identify specific issues and make recommendations for further development and reform.

This Note builds on previous analytical products produced by the World Bank in this area. In particular, this specific sector was assessed in 2008, with the publication of the "*West Bank and Gaza Telecommunications Assessment Note – Introducing Competition in the Palestinian Telecommunications Sector*" (World Bank, 2008). The present Note specifically discusses the evolution of the issues and of the telecom market with respect to the situation analyzed in 2008. A brief description of the main issues identified in 2008 and the progress performed is displayed in the final Conclusion and Recommendations section (§ 5). More recently, a subset of the domestic and bilateral issues faced by the sector has also been analyzed in the World Bank report "*Area C and the Future of the Palestinian Economy*", published by the World Bank in October 2013 (World Bank, 2013).

This note has been prepared through a mix of methodological techniques. The research team has performed desk research, leveraging on the available literature on the Palestinian and, to an extent, Israeli telecommunications sector. The team has had extensive discussions with the relevant stakeholders in Palestinian territories, including senior government officials, private sector associations and companies. The team has also engaged the relevant Israeli counterparts, and the Office of the Quartet, and donors involved in the sector. The team has also benefitted from the opportunity of conducting two field trips. The first field trip met with private sector representatives in Gaza. The second trip was an engineering field visit to sites around Ramallah. The team has also engaged in extensive consultations, including a one-day workshop open to all main stakeholders in Ramallah, where a detailed presentation of the draft report was discussed. This workshop took place on June 30, 2015. The team has also commissioned a "Household Survey on Telecom and Internet in Jordan Valley Villages and Gaza Strip" to the firm Alpha International. The survey was completed in September and October 2015, and was delivered to the Bank on October 24, 2015. This report references some of the results of the survey.

For the purposes of the Note, the team has mainly focused on telecommunications infrastructure, leaving out other important sub-segments of the ICT industry. The Note touches upon broadcasting (radio and television) issues, to the extent necessary to discuss radio-magnetic spectrum and other infrastructure related matters. The broadcasting sector would deserve a separate note and assessment. The ICT industry and ICT applications are not specifically assessed as part of the report. Finally, the emerging eGovernment applications are treated in a separate World Bank report.

The structure of the note is as follows: a first section deals with the assessment of the telecommunications sector, in terms of physical indicators, infrastructure, investment, prices and services. The Palestinian sector is assessed both in historical perspective (having the 2008 analysis as a starting point), and in relation with regional and global benchmarks. A second section of the report illustrates the main issues identified by the stakeholders. Finally, the last section of the report proposes key recommendations for further sector development.

3 Assessment of telecom sector in the Palestinian territories

3.1 Institutional and enabling environment

The Palestinian Authority (PA) is responsible for regulating the telecommunications sector areas under its jurisdiction (Areas A and B) as provided in the Oslo Agreement[5], which subject many regulatory areas to coordination between the Palestinian and the Israeli authorities. Sector policy and regulation are presently the responsibility of Ministry of Telecommunication and Information Technologies (MTIT) of the PA.

Until 1995, telephony services in the Palestinian territories came under the jurisdiction of Israel, whose incumbent operator Bezeq fulfilled both regulatory and operational functions. In 1995, Israel transferred around 80,000 telephone lines connected to 14 exchanges in the Palestinian territories to the newly formed PA (TeleGeography, 2015)[6], and in 1996 the Telecommunications Law 3/1996 gave the MTIT the "*the duty of setting up, running and operating telecommunications networks in the Palestinian territories*" (PA Law 3/1996, Art. 5)[7].

In 2004 MTIT and PA started a process to draft a new legal and regulatory framework to oversee the reform of the market, including the establishment of an independent Palestinian Telecommunications Regulatory Authority (PTRA) which would assume all responsibilities held by MTIT for the telecommunications sector. After several reviews, in June 2009 the PA President issued a decree to enact a new Law on Telecommunications and in April 2010 MTIT published the "*The Palestinian National Authority Statement of National Telecommunications Policy*" (PA Statement, 2010):

- The Statement includes six "*main policy objectives*", the first of which being the establishment of the PTRA: (i) To implement the new regulatory authority, (ii) To create a comprehensive legal framework, (iii) To establish a sound interconnection and access pricing regime, (iv) To introduce wholesale broadband access services, (v) To implement accounting separation and cost accounting and (vi) To regulate cost-oriented retail prices of dominant operators (PA Statement, 2010, pp.3-6).
- In addition, MTIT highlighted four "*other pressing matters*" with (a) "*the control national frequencies and the national numbering plan, that are at present under the control of the Israeli authorities,*" (b) "*a first market assessment (…) and issue a declaration designating dominant operators as appropriate*," (c) "*A new form of general licence authorising a broad range of services, including Voice over IP to Internet Service provision to replace existing licences which have a narrower scope*," and (d) "*several regulatory requirements that enhance competition, such as carrier selection and number portability*." (PA Statement, 2010, pp.6-7).

[5] Oslo Agreement, Annex III, Protocol on Israeli-Palestinian Cooperation in Economic and Development Programs and The Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip ("Oslo 2"— 9/28/95), Article 36

[6] All sources and reference are listed at the end of the note, section "*References and Sources.*"

[7] To do so, the MTIT, among other means, "*issues licenses to set up , operate and run private telecommunications networks and states necessary conditions of authorizations and make them public*" and "*states standard , foundations and rates to designate prices provided by the licensee*" (PA Law 3/1996, Art. 7).One of the first actions of the PA consisted in awarding a licence to Palestine Telecommunications Company (Paltel) which has made very solid progress in developing the first Palestinian fixed-line communications network (see sections §3.2) and the first Palestinian mobile network.

Despite the drafting of a new Law on Telecommunications and the PA Statement 2010, there has been no progress on the creation of the PTRA (see *infra* § 4.1.2).

The Oslo agreement leaves important regulatory and technical coordination decisions between the PA and Israeli authorities in the hands of a Joint Technical Committee (JTC) gathering specialists from both sides to coordinate frequency assignment, importation of telecommunications equipment, telecommunication activities in area C, permits to build infrastructure, etc. In practice, the JTC has only met a few times since 2000 and remains dysfunctional (cf. *infra* § 4.2.1)

3.2 Fixed-broadband sector assessment

After the Oslo agreements, the PA awarded in November 1996 the fixed-line incumbent Paltel (Palestine Telecommunications Company) a 20-year license to build, operate and own landlines, data communications, paging services, public telephones, satellite communication services, lease lines, sell telecommunications equipment (peripheral devices), Value-Added Services (VAS) and deploy and operate a mobile network (PSR 2013, p.3 & 19).

Following the award of the 20-year licence in November 1996, the fixed-line incumbent Paltel started to deliver fixed-services in January 1997 over an inadequate infrastructure inherited from Israeli incumbent Bezeq made of around 80,000 lines. Paltel had to immediately set to work on modernising and expanding the network, while kick-starting wide-ranging plans to achieve coverage of every Palestinian home. Within a year of operation Paltel had replaced every analogue link on the network, and in 1998 it completed a 140km fibre-optic cable linking the main towns in the Gaza Strip, and a 260km link between the cities in the West Bank. A microwave connection was subsequently installed, connecting the two transmission backbones; however, it quickly became saturated. Today, Paltel provides a complete portfolio of fixed line services, with telephony and internet narrowband and broadband (especially leased lines and ADSL). Paltel now has fixed copper network that covers most of the 800,000 Palestinian households, and has a stable subscriber base of 400,000 PSTN customers since 2012 (TeleGeography, 2015).

For fixed-broadband, almost all customers are served by ADSL lines delivered through Paltel's infrastructure. Paltel created its Hadara subsidiary in February 2005 – by purchasing the three strongest ISPs in the Palestinian territories – to manage the internet and data business (WB, 2011). Hadara now acts as Paltel's Internet Service Provider (ISP) and its current retail market share in volume[8] is roughly estimated at around 50% according to an investment bank (Ramsala, 2012), the rest being held by a dozen competing ISPs. The residential fixed-broadband market is now made of around 230,000 customers (the fixed-broadband penetration per household is thus about 29%). Corporate customers are reached by wireline (copper and fiber) and wireless infrastructures; no public data are available on market shares.

[8] Market share in volume refers to the total number of subscribers.

Table 2: Presentation of Paltel Group (2014)

PALTEL GROUP			
Subsidiary	**Paltel**	**Hadara**	**Jawwal**
Operations	Incumbent fixed-line operator	Internet Service Provider	Incumbent mobile-line operator
Year of foundation	1995	2005	1999
Subscriber base (2014)	• ~400k PSTN lines • ~230k ADSL lines	Rough estimate of ~40% market share of the 230k residential ADSL lines	2.66m mobile lines
Market share (2014)	• ~100% PSTN • ~99%+ ADSL		~75% (with inclusion of Israeli operators)
5-year CAGR subscriber base (09-14)	• +1.6% PSTN lines • +19.9% ADSL lines	N/A	+9.3%

Note: CAGR = Compound Annual Growth Rate
Source: Paltel Annual Reports; Ramsalla, 2012

3.3 Mobile sector assessment

Following the award of the 20-year licence in November 1996, and after the granting of frequencies by Israel, Paltel launched the mobile operator Jawwal in August 1999. Jawwal operates with strong spectrum constraints and can only operate a 2G system in the Palestinian territories (mobile internet is provided thanks to the EDGE technology which download speed is similar to fixed narrowband internet access).

In September 2006 a second mobile operator, Wataniya Mobile Palestine, was declared the highest bidder (with a bid of $US354 million) for a combined 2G and 3G mobile licence in the Palestinian territories[9]. MTIT subsequently issued a 2G/3G mobile licence to Wataniya in March 2007. However, the second operator could not commercially launch its mobile services in the West Bank before November 2009 because of a 2-year delay in releasing the spectrum by Israeli authorities. Up until September 2009, the Palestinian mobile market remained one of the few remaining markets with a single national mobile network operator (out of the 159 mobile markets identified by the GSM Association with a population of a least 1million[10], only 9 mobile markets were made of a single national mobile operator as of Q3 2009, including the Palestinian territories).

As of today Wataniya can only operate a 2G mobile system in the West Bank (Wataniya can still not operate a 3G mobile system in the West Bank and cannot operate at all in Gaza). Jawwal (and now Wataniya) also competes from the beginning with Israeli mobile operators who cover the whole West Bank with 2G, 3G and 4G signals (as they deliver mobile services to settlers).

[9] According to MTIT, a side letter signed by the then-Minister stipulated that MTIT would not introduce a new 2G or 3G operators for four years, thus granting Wataniya a 4-year exclusivity for 3G.

[10] This threshold is set to consider markets that are comparable to the Palestinian market as the GSMA include several markets made of islands, remote territories and principalities.

Table 3: 2G and 3G availability in the Palestinian territories (2015)

Territory	Jawwal		Wataniya		Israeli operators	
	2G	3G/4G	2G	3G/4G	2G	3G/4G
West Bank	✓	✗	✓	✗	✓	✓
Gaza	✓	✗	✗	✗	✗	✗

Source: Paltel and Wataniya Annual Reports

Estimations of Israeli market shares in the West Bank vary depending on the source, going from a low 7% estimate to over 30%[11].

Table 4: Estimation of mobile market shares in volume (e.o. 2014)

Operators	Palestinian territories	West Bank market	Gaza market
Jawwal	[60%-80%]	[50%-70%]	100%
Wataniya	[15%-25%]	[20%-30%]	0%
Israeli operators	[10%-20%]	[15%-30%]	0%
Total	100%	100%	100%

Source: PCBS, MTIT, Quartet, TeleGeography and World Bank estimates

Israeli operators have stabilised their total market shares since 2010. However, observers believe that they are currently regaining a stronger foothold as they provide 3G and 4G services to Palestinian consumers (which neither Palestinian operator are able to do). The provision of 3G and 4G services also allows Israeli operators to attract customers with a higher Average Revenue per User (ARPU).

[11] According to the Palestinian Central Bureau of Statistics (PCBS), the share of Palestinian households owning at least one Israeli mobile line was estimated at 30.3% in 2011 (World Bank, 2012). In 2012, the then Minister of MTIT claimed that Israeli mobile operators controlled more than 20% of the Palestinian market share (Ma'an News Agency, 2012). In 2014 the Office of the Quartet Representative stated that "Israeli operators captures 20-40% of market share" (Quartet, 2014). Meanwhile TeleGeography, a telecommunications consultancy, estimates that Israeli market share in the whole Palestinian territories was around 7% by the end of 2014.

Figure 2: Mobile subscriber base by operator (2003-2014)

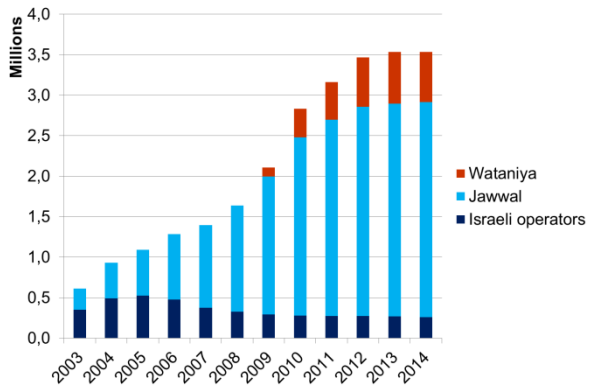
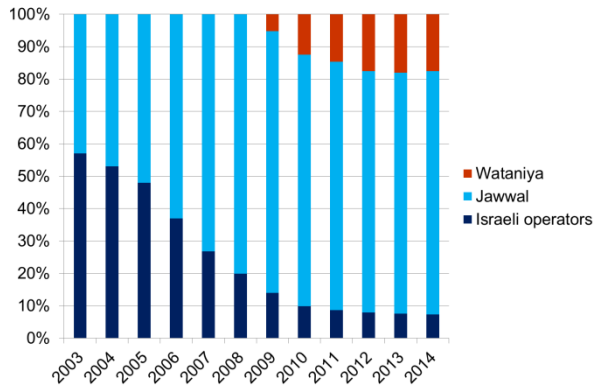


Figure 3: Mobile market share by operator (2003-2014)



Source: TeleGeography, 2015
Note: TeleGeography figures for Israeli market shares are conservative compared to other Palestinian (PCBS, MTIT) and international (Office of the Quartet) sources

3.4 International connectivity assessment

No Palestinian operators own an international gateway to connect directly their network to the rest of the world; they are required by Israel to go through an Israeli registered company to carry traffic out of Palestinian territories.

Although the lack of ownership of an international gateway (IGW) remains a strong issue for Palestinian operators, there has been some progress since the last 2008 assessment:

- In 2011 Paltel started a project to lay out to a fibre-optic cable from Jerusalem to Jordan in order to both support its international traffic and reduce the price of Internet services for consumers. This international link is now activated, but through an Israeli registered company.
- Similar to Paltel, all other Palestinian operators do not own an international gateway. However, they are now allowed to connect directly to Israeli carriers, thus bypassing Paltel.
- Palestinian operators can buy capacity directly on the MedNautilus submarine cable and co-locate their switches at the landing station based in Haifa, Israel, but they still need to go through an Israeli registered company to carry traffic from this landing station to the Palestinian territories.

Palestinian operators also face strong constraints in Area C as they cannot provide "microwave backhauling" (i.e. wireless links used to connect the last-mile network with the backbone; this type of links is commonly used in the vast majority of the world).

3.5 International benchmark of the Palestinian telecommunications sector

The Palestinian telecommunications market is quite unique as a number of inputs – such as spectrum for mobile services and backhauling, permits for importing and deploying telecom infrastructure and equipment, and access to international connectivity – rely on an Israeli approval process. A detailed benchmark in Annex § 8.1 highlights how these unilateral and bilateral issues affect the Palestinian

market, while keeping in mind that domestic issues are also hindering the development of the telecom sector:

- The penetration of Palestinian mobile services is lower than in other similar markets, whereas the fixed broadband penetration is in the average;
- Retail prices of mobile and fixed services are higher in the Palestinian territories are higher than in similar markets when taking into account either the Purchasing Power Parity or the GDP per capita.

4 Telecom sector achievements and issues

Note: all achievements and issues are largely common between the Palestinian territories; for issues specific to Gaza there is a dedicated section at the end.

4.1 Domestic achievements and issues

4.1.1 Main Policy and Regulatory achievements

Introduction of a second mobile operator

The award of a second mobile license to Wataniya is a positive step towards enhancing competition in the mobile market, though the narrow spectrum was awarded to Wataniya with a 2-year delay and the new entrant continues to face significant spectrum constraints, inability to deploy 3G, and inability to operate in Gaza. The incumbent Jawwal also faces significant spectrum constraints but is able to operate in Gaza where it is the *de facto* mobile monopoly operator.

Enhancement of the fixed wholesale market

After the publication of the 2010 Telecommunications Policy (PA Statement, 2010), MTIT pushed for more competition by enhancing the wholesale market, which at that time consisted in the ability of ISPs to resell Paltel broadband lines on the retail market. Two main measures were implemented by MTIT to this end:

1. MTIT and Paltel worked together to set up a new Bitstream Service Access (BSA) and a "*Bit-Stream Access – Model Description*" paper was published in October 2010 by MTIT (MTIT BSA, 2010). However, the bitstream service offered by Paltel is not as fully functional as the standard bitstream encountered in other countries; the end-user is required to subscribe to a broadband (ADSL) line to Paltel, and then add an Internet access service on top of it (a scheme sometimes referred to as "double billing"). The BSA offer is also restrictive as ADSL technology limits the capabilities of ISPs to provide broadband to corporate customers.
2. MTIT provided a temporary permission to the Jerusalem District Electricity Company (JDECO) to deploy fibre for smart metering; JDECO has now deployed around 380km of fibre along its electrical lines. Its telecom subsidiary needs a license in order to provide access to its fibre network in a non-discriminatory fashion to telecom operators.

ISPs also have developed their own fibre infrastructure and fixed-wireless infrastructure to deliver broadband and VoIP, mainly to professional and corporate customers[12].

The introduction BSA in 2010 led to a significant increase in broadband subscription as shown in the figures below, and in 2015 Paltel listed a total of 17 ISPs offering services under the BSA model, excluding its subsidiary Hadara; of those, ten were operating solely in the West Bank, six were operating only in Gaza, with one serving both regions (TeleGeography, 2015).

[12] In 2008 MTIT opened the internet and VoIP services for competition and 8 broadband and 8 VoIP service providers were licensed. MTIT also introduced competition on the Value Added Services market and WiFi market.

Figure 4: Broadband subscribers base (2005-2014)

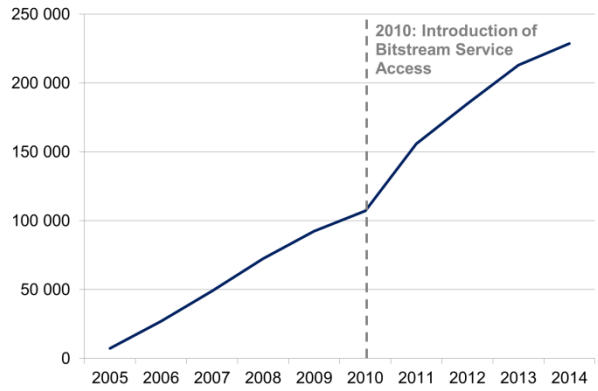
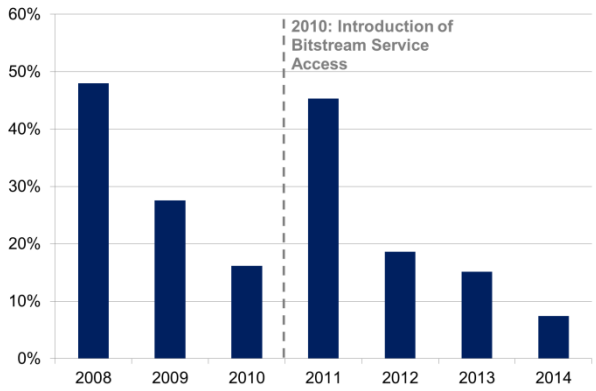


Figure 5: Broadband subscribers yearly growth (2008-2014)



Source: TeleGeography, 2015

Liberal licensing regime for ISP and data providers

MTIT has introduced a light-handed licensing regime for ISPs, as a local ISP can acquire a broadband license and become a broadband operator; there are now more than 20 ISPs in the market. Few other countries in MENA have adopted this liberal approach, which is a norm in Europe and other regions. As a result, local entrepreneurs can acquire rights and invest directly in the development of broadband infrastructure at connectivity and access level. This has been a factor of success for the development of broadband in other countries, especially in emerging markets in Eastern Europe. In addition, Palestinian ISPs with a broadband license are allowed to use alternative infrastructure built by non-telecommunications operators. The Palestinian authorities deserve praise for this policy approach.

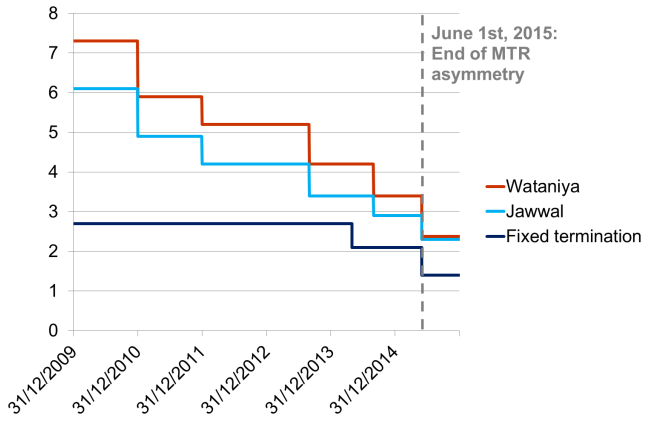
Introduction of account separation

Another positive development is the 2010 issuance of an ISP license to Hadara, which stipulates full account separation from Paltel's account. While there are no detailed guidelines issued yet by MTIT on this matter, in 2014 MTIT hired an audit firm to perform a compliance audit, and according to MTIT and Paltel the non-public interim report draws favorable conclusions for Paltel.

Pricing of fixed and mobile termination rates

The setting of fixed and mobile termination rates (FTR and MTR) is performed by MTIT with a cost-modeling tool. There has been a significant glide-path during the last 6 years as the MTRs have decreased at a rate of 15% every year (from an average of $6.7c in 2009 to $2.1c in 2015). The FTR decreased at a lower pace (from $2.7c in 2009 to $1.6c). Since June 2015 MTIT has ended the mobile asymmetry regime to switch to symmetric rates. MTIT also plans to further reduce the MTRs in a near future. The strong decrease in the Mobile Termination Rates will help to enhance competition dynamics on the mobile retail market by improving the possibilities for the mobile challenger Wataniya to replicate to preferential on-net offers by the incumbent Jawwal (cf. § 0).

Figure 6: Evolution of fixed and mobile termination rates ($cent)



Source: MTIT

4.1.2 Main Policy and Regulatory issues

A. The regulatory framework needs to be strengthened

The domestic legal framework in the Palestinian territories presents several significant challenges, chief among them the lack of an independent telecommunications regulatory authority supported by an up-to-date regulatory framework.

The process of setting up a national regulatory authority started 12 years ago (cf. PPIAF, 2011). In August 2003, the PA decided to establish a regulatory authority to organize the telecommunications sector in the Palestinian territories as part of an overall strategy to develop a liberalized, competitive telecommunications market. The telecommunications sector Law 3/1996 was considered out of date as it lacked appropriate regulation – through an independent regulator – and allowed for monopolies[13]. In March 2006 a law creating a new regulator was signed by the President of the PA but rejected in May 2006 by the Palestinian Legislative Council. In June 2009 the President of the PA issued a decree to enact a new Law on Telecommunications[14] to provide for:

- The establishment of a separate and strong national regulatory authority, the Palestinian Telecommunications Regulatory Authority (PTRA), to provide professional, fair, transparent, and independent regulation of the telecommunications industry.
- The split of responsibility for the sector between the MTIT, which will establish the overall sector policy, and represents the sector in bilateral and international fora, and the PTRA, which will implement these policies and regulate the telecommunications industry.

As of today, the regulator has not been established, and the prospects of having a national regulatory authority in the near future are dim. Moreover, there remains an internal debate within MTIT regarding

[13] The PA started to cooperate with the Public Private Infrastructure Advisory Facility (PPIAF, a multi-donor technical assistance facility) in 2004 to formulate and draft a new telecommunications law. The PPIAF-funded studies recommended an updated legal framework for the sector and prepared a new draft telecommunications law. The draft law allowed for the establishment of a proposed new regulatory authority, the PTRA or Palestinian Telecommunications Regulatory Authority (PPIAF, 2011, p.1)

[14] The 2010 "*Palestinian National Authority Statement of National Telecommunications Policy*" document (PA Statement, 2010) only refers to it as the "2009 Law".

the revamping of the regulatory framework on whether it should comprise a separate new law, or an amendment to the existing Telecommunications Law (PPIAF, 2011, p.2).

The establishment of an independent regulatory authority would provide a strong catalyst for the enhancement of the Palestinian telecommunication markets. According to 2013 data from the International Telecommunication Union (ITU), 159 of its 194 member states (82 percent) have a separate ICT regulatory agency. This report still strongly advocates the need to establish an independent authority.

The creation of the PTRA would help to resolve several legal and institutional issues affecting the sector, including:

- enhancing regulatory framework to handle market observatory, market definition, SMP, remedies, monitoring and sanctions and enforcement;
- enforcement of Reference Interconnection Offers to provide a more dynamic, transparent non-discriminatory and cost-oriented wholesale market.
- The lack of an *ex post* competition authority (as opposed to an *ex ante* regulatory authority) to monitor and approve potential mergers[15] and prevent potential anti-competitive behaviors.

B. Dominance of Paltel Group

A body of evidence points to Paltel being the dominant operator in both the mobile and fixed markets[16]:

- **Fixed wholesale market:**
  - Paltel fully owns the fixed-infrastructure, which can be considered an essential facility with the civil engineering (trenches, ducts and poles) and the copper local loop;
  - For residential customers, there is no Local Loop Unbundling, and the Bitstream Service Access BSA consists in end-users having to subscribe to an ADSL line to Paltel before subscribing to an ISP to access the Internet. This significantly limits the commercial and technical freedom of ISPs;
  - For professional and corporate customers, there is no wholesale offer available to address this lucrative segment.
- **Fixed retail market:** Paltel Group has a strong and stable market share in volume (around 50%) due to its subsidiary Hadara.

[15] The 2011 World Bank report "*West Bank and Gaza, Improving Governance and Reducing Corruption*" states: "*Paltel also created Hadara, by purchasing the three strongest ISPs in WB&G. In this process, Hadara and other ISPs became resellers of ADSL provided by Paltel. The creation of Hadara, in fact, should have been reviewed by MTIT from a competition standpoint to determine whether Paltel – with control over infrastructure – should have been allowed such dominance in the ISP market. However, according to MTIT, the agreement in the license gave Paltel the exclusive rights to provide all telecoms services, including ISP, and this restricted the ministry's ability to intervene in this issue*." (World Bank, 2011, p.39)

[16] Conducting a proper Significant Market Power (SMP) regulatory assessment is out of scope of this note; for more details on the methodology the reader may refer to European Commission, *Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services* (2002/C 165/03), 11 July 2002. As mentioned in a 2011 World Bank report on *Improving governance and reducing corruption in West Bank and Gaza*, *"for the past 15 years, Paltel, which includes companies in all the main sectors of the telecommunications and information technology (IT) market, has dominated the ICT sector. It controls a high market share in all relevant market segments and is the only company able to operate in a wide range of segments"* (World Bank, 2011).

- **Mobile retail market: Paltel:** Paltel Group has a strong and stable market share in volume (between 75% when including Israeli mobile operators and 81% when excluding them) due to to its subsidiary Jawwal. It has no competitors yet in Gaza.
- **Cross-sector leveraging:** Paltel Group is a privately owned, vertically integrated network operator, with Paltel as the fixed line operator, Jawwal the mobile operator, Hadara the data services provider, Hulul the IT arm, Palmedia the multimedia services provider and Reach the first call center[17]. As Paltel stated it in its 2013 annual report, "*Paltel Group plays a vital role in the Palestinian economy, as the Group contributes to about 5.9% of GDP (PCBS, 2013). The Group is also considered the leading employer in Palestine within the Palestinian private sector. PALTEL stock also represents 33.16% of the total Palestine Exchange market cap, according to market data as end of 2013*" (Paltel Group, 2013).

Based on extensive interviews with operators, the creation of the PTRA would mitigate the risk of anti-competitive practices by Paltel, who could leverage its dominance on the Palestinian wholesale and retail telecoms markets (monitoring dominance is usually part of the mandate of a regulatory authority). The competitors identify three potential anti-competitive practices (details are provided in the Box below): i) limited access to Paltel's infrastructure, ii) differentiated price for "on-net/off-net" and iii) cross-subsidized fixed broadband and mobile services. Although several competitors mentioned these practices, assessing their existence and impact is out of scope of this Note. **This Note does however identify the lack of a regulatory agency with the proper framework, capabilities and tools to deal with them.**

Potential market conducts that could be investigated by the PTRA

Based on extensive discussion with several Palestinian operators, the PTRA could investigate at least three practices, and assess to which extent they induce anti-competitive effects or provide benefits to the consumers.

Limited access to Paltel's infrastructure in the fixed-broadband market

Third-party ISPs do not have open, transparent and non-discriminatory access to Paltel's infrastructure; there is no Reference Interconnection Offer (RIO), or a catalogue price list. When competing ISPs do have access to Paltel's fixed infrastructure, the contractual conditions do not allow for strong and commercial freedom. As a consequence, ISPs claim that they are better off by deploying their own fiber infrastructure, which implies inefficient infrastructure duplication. Even though MTIT introduced Bitstream Service Access in 2010 that improved the broadband penetration, end-users are required to subscribe to a broadband line to Paltel before selecting an ISP to provide the Internet access; there is no local loop unbundling planned at this stage. As mentioned in the aforementioned 2011 World Bank report, another anti-competitive behavior is a "*process of 'cherry picking' major institutions, which were receiving leased-line services from the existing ISPs, and providing the services at a cheaper cost, which was possible due to their ownership of the infrastructure; and the offer of subscription free internet service, a process carried out in a manner that marginalized existing ISPs as the main service providers*" (World Bank, 2011). Such anti-competitive risk would require an extensive regulatory and competition assessment. In the interim, fibre infrastructure is visibly deployed in the West Bank by competing ISPs: this raises a double question of economic efficiency and economic rationality as competing ISPs consider it more cost-effective to duplicate the fixed infrastructure rather than access Paltel's infrastructure.

"On-net/off-net" price differentiation in the mobile market

"On-net/off-net" price differentiation implies that "on-net calls" (calls made within the network of the mobile operator) are cheaper than "off-net calls" (calls made to a rival mobile network). An evidence of this practice can be found in the Alpha International survey that shows that 71.7% of Palestinian respondents "*agree that they*

[17] Paltel also owns equity in VTel Holdings, a Dubai-based telecommunications firm.

limit their phone calls to mobile or fixed phones of another network operator because they are concerned with the higher communication charges than when making a phone call to others on the same network operator." While at first sight such offers appear to be marketing tactics by mobile operators, they have a significant impact on the mobile market structure by favoring "big" operators with high market shares, to the detriment of new entrants (for more details on the economic demonstration see French *Autorité de la Concurrence*, 2012). Although "on-net/off-net" price differentiation may induce an anticompetitive effect, they can be objectively justified by a difference between the costs borne for the supply of the two types of calls (the chief reason being an asymmetry in the call termination rates). The end of termination rate asymmetry and the glide path to lower mobile termination rates is a good step in this respect.

Cross-subsidy of fixed and mobile services

Competitors to Paltel in the fixed and mobile market mention the risk that Paltel is using its dominant position to perform cross-subsidies between its different business units, making it difficult for Wataniya and other ISPs to compete. Performing cross-subsidies between different subsidiaries can provide benefits for the consumers, but can also foreclose the market for competitors. This should be sorted out through the enforcement of accounting separation to ensure a fair competition between Paltel's different subsidiaries and competitors. Note: Cross-subsidising should not be confused with bundling fixed and mobile services in a single package, a common practice intended to provide customers with better products or offerings in more cost effective ways. Currently Paltel is not authorized to provide bundles.

C. Other regulatory and market issues

Other regulatory issues should be addressed to strengthen competition. Mobile Number Portability (MNP) is not implemented; this is an important measure to allow Wataniya to compete with Paltel and attract customers that are willing to switch operator but fear the loss of their mobile number. An additional measure to foster competition is ensuring public and fully competitive tenders to provide broadband services to Palestinian ministries.

4.1.3 Institutional capacity at the Ministry

According to MTIT, after the separation of Gaza late 2007, MTIT did not have enough qualified employees in West Bank as all the engineers and executives were in Gaza at that time. Since that time, MIT as started a policy of recruitment of qualified staff in the technical, legal, Policy and regulation, and administrative field to lead the telecommunications sector in Palestinian territories.

MTIT has currently around 322 employees, and most of them (209) are employed by the postal department. 113 employees work in the field of ICT, including 20 qualified engineers[18]. MTIT employees participate in international and regional organizations, such as ITU, ESCWA, EMERG, and UFM[19]. A new, IT-enabled, licensing system has been introduced and a new headquarters, including an advanced IT training center has been introduced, in partnership with foreign aid from Korea and Estonia. Despite the efforts undergone by MTIT to attract competent personnel, it still suffers from lack of qualified ICT staff – such as engineers and legal experts.

[18] As a point of comparison MTIT had only 11 engineers in 2008.

[19] Participations in such organizations are serving as a platform for knowledge exchange and technical capacity development, mainly through the expert group workshops, the training programs, and the exchange of ideas and expertise.

4.2 Domestic and bilateral achievements and issues

4.2.1 Bilateral framework

The framework governing Palestinian-Israeli bilateral arrangements on telecommunications is the Oslo Accord of 1993, specifically Article 36 of Annex III of the Interim Agreement on Telecommunications[20] (e.g. Articles B.6, C.2, D2). This framework, the reference agreement between the Israeli and Palestinian counterparts to support economic development and stability in key economic sectors, has failed to deliver its promise of an independent telecommunications sector in the Palestinian territories. According to the principles of the Oslo Agreement: "*Israel recognizes that the Palestinian side has the right to build and operate separate and independent communication systems and infrastructures including telecommunication networks, a television network and a radio*."

In 2008, the World Bank study on the Palestinian telecommunications sector found that the existing conflict hurts the work of Oslo's Joint Technical Committee (JTC) to implement the provisions under the telecommunications sections of the Oslo Agreement, that the JTC had met only twice since 2000 for two perfunctory meetings in 2004, and had left important issues unresolved. The 2008 study recommended that "*the structured negotiations mechanism of the JTC (which deals with mutual coordination of frequencies use, interference problems, diverse international issues, and other sensitive subjects of mutual importance), should be supported and encouraged in the future*."

In 2015, Oslo continues to be a *de jure* valid but *de facto* largely non-operational framework captured by political agendas and unable to deliver the basic requirements of:

1. regular and formalized dialogue between the Israeli and Palestinian sides;
2. joint agreements, decision making and implementation in a time-sensitive manner suitable for a rapidly evolving sector; and
3. effective resolution of challenges brought to the table by either side, while taking both sides' concerns into account.

The instrument for such discussion was mandated to be the JTC composed of the Israeli MoC, the Palestinian MTIT and COGAT with occasional observers. JTC was intended to be the main forum for dialogue and agreements, but is largely defunct. JTC meetings are too few and far between; when this analysis was conducted in May 2015, the previous JTC meeting had been held in March 2014. The Palestinian counterparts would like to schedule regular meetings of the JTC, coherently with the Oslo Agreement. However, by Israeli accounts, the JTC stopped meeting after Palestinian politicians approached various UN agencies with the request for state recognition or for technical assistance. A political decision was made in Israel to pause the JTC meetings as Israeli authorities considered that the counterpart was actively seeking solutions outside of the Oslo framework.

3G spectrum allocation for the Palestinian territories has been in a stalemate holding pattern ever since, which is clearly detrimental to the Palestinian economy (see next section). Potentially encouraging is that neither Israeli nor the Palestinian officials interviewed would call Oslo 'obsolete' or 'dead' – both sides

[20] Cf. Article 36 of Annex III of the Interim Agreement "Oslo Accords" – Telecommunications.

agreed that until a political statement was made pertaining to this matter, Oslo was de jure intact and could be revived[21].

4.2.2 Acute spectrum scarcity for Palestinian mobile operators

Per the Article 36 of Annex III of the Interim Agreement, total control of the Palestinian frequency spectrum was given to Israel provided that Israel would release spectrum to the Palestinian Authority when needed and within one month of request. However this has not been the case and today the two Palestinian operators hold a total of 9.4 paired-MHz[22]: 4.8 MHz for Jawwal in the 900 MHz band and 4.6 MHz for Wataniya – with 1.8MHz in the 900 MHz band and 2.8MHz in the 1800 MHz band –. This is in stark contrast with the 121.6 paired-MHz currently allocated to five mobile operators in Israel (and an auction in January 2015 awarded an additional 38 paired-MHz for 4G/LTE), with the 5th mobile licence awarded to Golan Telecom in April 2011.

The amount of frequencies that the mobile operator receives is important because it determines the number of subscribers the company can service and the kinds of services it can provide. Moreover, lower band frequencies (800 and 900 MHz band) have better propagation characteristics and can travel farther and penetrate walls better, and are thus more desirable than higher band frequencies (1800 MHz, 2100 MHz and 2600 MHz). With only 4.6 paired-MHz distributed between the 900 MHz band and 1800 MHz band, Wataniya is a co-holder of a world-record with a Bulgarian operator (Mobiltel) as no other mobile operator in the world started its operations with such a narrow frequency range[23] (The Economist, 2010).

[21] Israeli official stated there might be readiness to reconvene talks on outstanding issues through the JTC. Palestinians also indicated readiness to reboot the JTC process. However, Israel's position is that it hopes the PA will recognize that unilateral steps on the world stage, such as approaching UN agencies to recognize a Palestinian state (which Israel sees in violation of the agreed-upon mechanisms) are no substitute for working ties. Palestinians are frustrated by years of stalemates and may continue to turn to international agencies for technical and political support. Political maneuvering is therefore likely to continue to capture the potential progress that necessary regular and timely discussions could provide, producing an unnecessary stalemate that is harming Palestinian businesses and consumers.

[22] Also known as "MHz duplex" of "MHz FDD", whereby a lower band is used for the uplink path and the (paired) upper band is used for the downlink path.

[23] Mobiltel Bulgaria was later awarded 19.4 paired-MHz.

Figure 7: Paired-MHz assigned to Israeli and Palestinian mobile operators (2015)

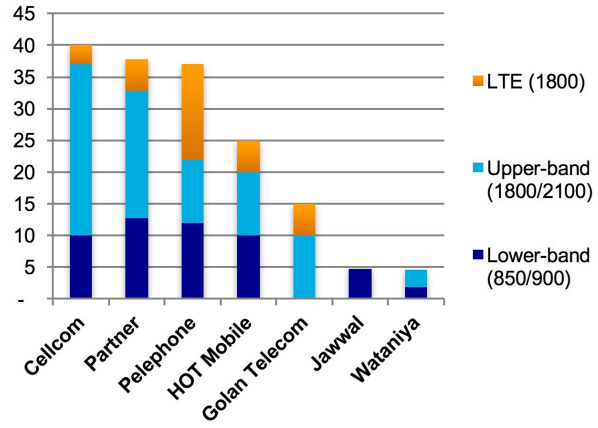
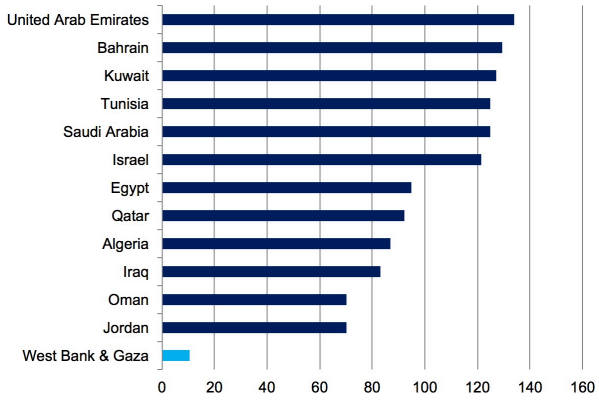


Figure 8: Country-comparison of total paired-MHz assigned to mobile operators (2014 or most recent year)



Source: Spectrum Monitoring, 2015; GSMA, 2013; Schejte, 2006; MoC, 2014; NRA websites

This very strong spectrum scarcity imposes a heavy burden on Palestinian mobile operators:

- Such a narrow spectrum bandwidth leads to higher deployment cost as additional sites are needed to cope with the increase in traffic (with a larger spectrum bandwidth additional spectrum – or "carriers" – can be activated on the same site which reduces the total amount of sites required)[24].
- A very narrow spectrum bandwidth limits the number of customers a mobile operator can serve. Because of the very low spectrum bandwidth available in the 900 MHz band, Wataniya claims that it has reached its network limits in the West Bank (Wataniya could increase its subscriber base by addressing Gaza consumers, but it is currently forbidden to do so by Israeli authorities);
- Palestinian operators cannot deploy any 3G or 4G/LTE system as 3G and 4G/LTE require a bandwidth of at least 5 paired-MHz (a "carrier"); these carriers come on top of the bandwidth required for 2G (it is not possible to allocate the whole spectrum for 3G as there are still numerous mobile handsets which are only 2G-compatible).

Oslo provides for full access to the spectrum for Palestinian operators according to their needs. Given the fast-changing pace of the industry, mobile broadband is essential. So far the Israeli positions has been to discuss portions of the spectrum that was not allocated to Israeli operators. **In this narrower context,** this spectrum scarcity is surprising. Nowadays, mobile spectrum could be made quickly available and spectrum refarming could free up additional space for Palestinian operators. An in-depth analysis of spectrum use by Palestinian and Israeli operators leads to the following short-term spectrum availability:

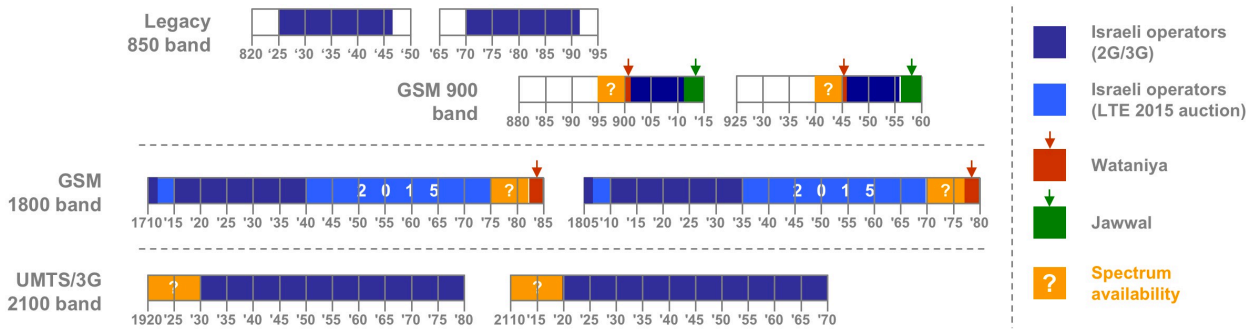
- In the 900 MHz GSM band, there are at least 5 paired-MHz that could be made available;
- In the 1800 MHz, there was 45 paired-MHz available before the 2015 LTE auction in Israel. After the auction of 38 paired-MHz, there should be 7 paired-MHz that could be made available;
- In the 2100 MHz, there are 10 paired-MHz available;

[24] According to the Israeli Ministry of Communication: "*in order to achieve the same coverage with the same level of service in the 1800 MHz range versus the 850 MHz or 900 MHz range, nearly double the number of sites is needed*" (MoC, 2014).

- In the 2600 MHz band (which is not yet assigned to Israeli operators), according to the Israeli MoC there are 60 paired-MHz that could be made available; this band is "*currently used by a telecommunications company and the state, and expected to be cleared in the near future*" (MoC, 2014, p. 14).

According to the MoC, the spectrum identified as potentially available in the 900, 1800 and 2100 band is currently "*in use*" but could be made available in the future. It is not clear yet why additional spectrum has still not been already released to Palestinian operators.

Figure 9: Spectrum assigned to Israeli and Palestinian mobile operators and potential availability (2015)



Source: Spectrum Monitoring, 2015; Schejte, 2006; MoC, 2014; MoC, 2015

On the bilateral side, an agreement should be reached to:

- Let the second mobile operator provide 2G mobile services to Gaza population;
- Let the two Palestinian mobile operators provide 3G services – and later on LTE services – to Palestinian population;
- Let the two Palestinian mobile operators deploy an efficient mobile network with sufficient spectrum;
- Possibly enable the attribution of a 3rd Palestinian mobile operator in the future to strengthen the mobile competition dynamics.

Recent 3G agreement

In late November 2015, an agreement for a limited release of frequencies to Palestinian operators to launch 3G services has been signed. If implemented, the agreement would finally allow Palestinian operators to introduce mobile broadband using 3G, about eight years after their initial request. The agreement would still place the Palestinian operators at a competitive disadvantage, as Israeli operators have 3G and 4G capabilities and are able to attract higher value customers. As the MENA region is moving towards 4G, the recent agreement on the release of frequencies can hardly be celebrated as a success – although it does represent a first step forward.

4.2.3 Unauthorized Israeli mobile activity in the West Bank

The presence of unauthorized Israeli mobile activity in the West Bank is a major issue that is affecting the development of the Palestinian telecommunications sector. The Oslo Agreement confers to licensed Israeli telecommunications operators the right to establish facilities in the settlements and to cover the roads connecting the settlement to Israel. As a result, mobile operators have established

telecommunications infrastructure in the settlements and cover large areas of the territory in the West Bank. As an example, the pictures below show telecommunication infrastructures in the settlement of Psagot, on a hill facing downtown Ramallah.

Figure 10: Picture of a mobile tower in the settlement of Psagot



Source: Authors

The coverage of the signal is very comprehensive and has been verified by the authors of the report. To give an idea of the phenomenon, it is possible to refer to the coverage table provided by Orange (Partner) and Pelephone to the GSMA.

Figure 11: Mobile 3G coverage of Israeli operator Orange/Partner (2.1GHz band)



Figure 12: Mobile 3G coverage of Israeli operator Pelephone (850 MHz/2.1GHz band)



Source: World Bank maps based on GSMA Association maps (2015)[25]

The mere fact that Israeli operators are offering commercial services in the West Bank is a matter of contention. Palestinian operators are claiming that there is a deliberate attempt on the Israeli operator part to establish commercial presence in the whole of the West Bank. The tower installation in settlements close to Ramallah, like the one in Psagot, for example, do suggest that the Israeli operator have deployed infrastructure to cover well in excess of the needs of the population of the settlement (it may be to cover the roads linking the settlements to Israel but has the effect of covering the whole area). In addition, the strength of the signal, for example in downtown Ramallah, is such to suggest that no control is placed on the part of the Israeli operators to limit the strength of the signal. The Israeli counterparts, on the other hand, claim that the sale of pre-paid cards of Israeli operators in the territory of the West Bank is a phenomenon that the Palestinian authorities have the power to address internally.

The presence of Israeli operators, already an issue in 2008, is aggravated by the lack of 3G and 4G capabilities by the Palestinian operators and by the asymmetry in prices.

The household survey commissioned by the World Bank confirmed the presence of this issue. According to the survey results, while 95.6% of households in the Jordan Valley owned at least one mobile line with a Palestinian operator, only 10% owned at least one mobile line providing Internet access with a Palestinian operator. In stark contrast, 46.3% of households in the Jordan Valley owned at least one mobile line providing internet access with an Israeli operator.

[25] GSMA, Mobile World Live – GSM Roaming and Coverage Maps; according to the GSMA, "GSM Coverage Maps is a unique resource containing information supplied and approved by the members of the GSM Association."

4.2.4 Cross-border restrictions on telecom material and staff

As mentioned in section § 3.4, Palestinian operators cannot connect directly their networks to the rest of the world and are obliged to go through Israeli registered companies, even for accessing the MedNautilus submarine landing station located in Israel. This represents an economical and technical burden to Palestinian operators.

A second issue is the lack of a direct connection between Palestinian territories. Paltel has indicated that they cannot link their infrastructure in the West Bank with the counterparts in Gaza, for example, through a microwave link with sufficient capacity. There are strong Israeli restrictions in releasing permits to move equipment within Area C, allow infrastructure deployment, and allow the installation of microwave links[26].

A third issue is the difficulties faced by Palestinian operators to address consumers in Area C. According to the Alpha International survey, the Israeli operator Cellcom has a 41.5% market share of the fixed broadband market in the Jordan Valley, compared to 16.1% for Hadara.

Finally, both Jawwal and Wataniya shared that the Israeli counterparts have forced them to place their main switches in Israeli territory. Both claim that these restrictions amount to extra costs for the company. For example, both companies need to hire – at a high cost – staff in Israel to service and maintain the switches in Israel. While this claim is most likely correct, it was not possible to quantify the extra cost incurred.

Palestinian government counterparts and Palestinian private sector companies highlighted major difficulties experienced with the import of equipment. Difficulties with the import of equipment have been quoted by Wataniya, for example, as an obstacle that prevented them from launching operations in Gaza (see also infra § 4.2.2).

The meetings with Palestinian ICT companies, highlighted several difficulties, including:

- Delays in obtaining relevant authorizations;
- Cumbersome procedures;
- Extra cost, related to the obligation of going through Israeli importers;
- Non-transparent and changing processes, and opaque decision making, causing undetermined delays.

Challenges faced by Palestinian telecom and ICT companies to deploy infrastructures

The operators have pointed out to a series of constraints faced when importing equipment. In particular, Jawwal has provided a detailed account of the procedures, which are illustrated below. One of the many constraints faced by Jawwal is its inability to build infrastructure and specifically towers in Area C. This results in a loss of opportunity to serve many of the 100,000 Palestinians who live in this area, in addition to the 2.5 million Palestinians who pass through the roads of Area C.

According to Jawwal, the company requested several times and in many occasions to get approval to deploy cell sites in Area C in order to fulfil the license obligation to cover the Palestinian villages and main roads connecting main cities in Area C. In 2009, the Israeli Authorities responded that Jawwal could get the necessary approvals for C Area sites via an Israeli company, whereas Jawwal requested that such approvals be granted directly to Jawwal. In the same year, Jawwal submitted a plan for 57 sites, where Israeli Authorities responded with very strict

[26] Cf. World Bank report "*Area C and the Future of the Palestinian Economy*", published by the World Bank in October 2013 (World Bank, 2013) for more details.

conditions as a prerequisite for site approvals. The restrictions were as follows:

1. The site should be installed in areas owned by Israeli Authorities;
2. The site cannot be connected to Area A and B;
3. The transmission frequencies to connect sites in Area C should be allocated within the Israeli band.

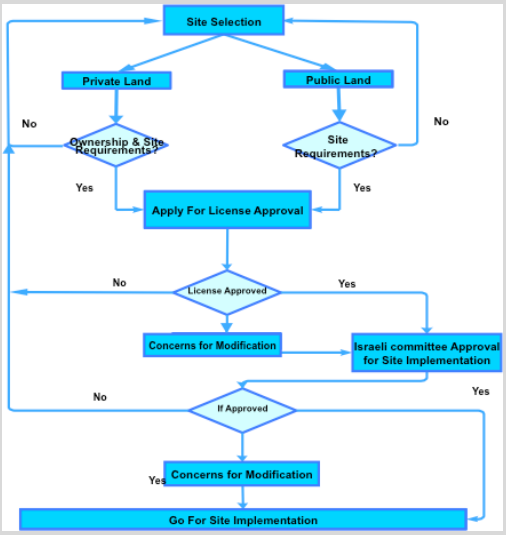
According to Jawwal, based on these restrictions, Jawwal is unable to have any site operational in Area C, hence Jawwal asked the Israeli Authorities in 2013 to revise these restrictions. As a result, the Israeli Authorities responded in 2014 by removing point 1 & 2 and maintaining point 3.

According to all operators interviewed for this report, despite the changes made by the Israeli Authorities in 2014, the process in obtaining a specific approval for a specific site is lengthy and complicated since time limits are non-existent during any stage of the process. Once the process begins, the milestones for each stage are unpredictable since there is no timeline for the process and leaves operators with no end in sight. Adding to the challenge, approval was given to the 57 sites on a "general approval" principle which means that specific approvals are needed for each requested site; in other words, each site is considered as a separate project and needs special approvals.

Hence, according to Jawwal, out of the 57 sites requested, only 1 site has been installed since 2014. In addition, the Israeli Authorities allowed Jawwal to get approvals for sites in the list submitted located in areas not more than 500 meters far from Area A and B. As a result, 5 sites were deployed in these areas.

Jawwal has provided a flowchart for site approval (see figure below).

Figure 13: Flowchart for site approval by Jawwal



Source: Jawwal

According to Jawwal, each stage of the process as displayed on the flowchart does not have a fixed duration and hence the team working on the requirements are constantly left in the dark.

According to Jawwal, the following points deserve to be highlighted:

Ownership of the Land

- If the land is privately owned, Jawwal faces the tedious process of figuring out who the land belongs to exactly. It is a long process and an investment of time and energy.
- The Israeli Authorities also have the option of advising Jawwal to choose an alternative site to erect a

cellular site, and if this is the case, then Jawwal needs to start from the beginning (after being in a lengthy process of a year or more) in terms of figuring out whether the land is privately or publicly held.

All Stages

- After Jawwal applies for all the approvals to erect/construct a site the request might be refused from the Israeli Authorities since the site might be a military area, public land belonging to the governmental authorities or land that has already been confiscated.
- As a result, the Israeli Authorities will ask Jawwal to search for an alternative site where the entire process which may have taken up to a year or more, will need be repeated from the start since construction in a new site will be requested by Jawwal.

The Israeli counterparts have pointed out to security concerns. They have mentioned the *dual use* of certain equipment, such as spectrum monitoring equipment. Spectrum monitoring equipment is an essential tool for any regulatory agency with the responsibility to oversee the development of the telecom sector.

4.2.5 Complaints by Israeli stakeholders

During our meetings with Israeli authorities, three main complaints have emerged.

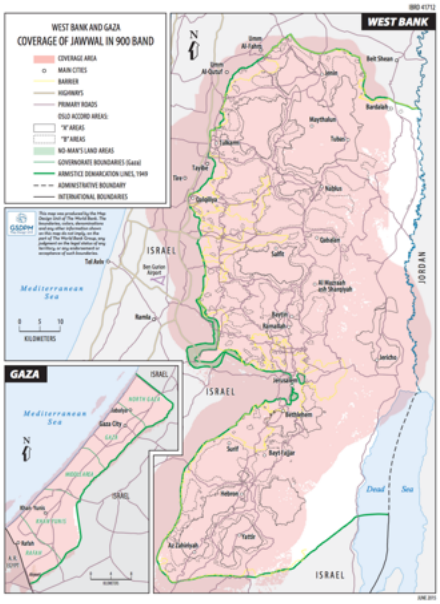
Coverage of Israeli territories by Palestinian operators

Palestinian operators cover significant parts of Israeli territories near the Israeli-Palestinian border. The Palestinian signal can reach as far as the Ben Gurion International Airport near Tel Aviv. This is not an interference issue (the MoC does not complain about interferences for mobile services[27]) but a sovereignty issue, whereby customers in Israel should be solely covered by Israeli operators.

Palestinian operators acknowledge that they cover parts of Israeli territories near the border, and state that such coverage is essential to continue service Palestinian customers travelling into Israel. However, and contrary to Israeli operators operating in the West Bank, Palestinian operators do not have any Israeli customers.

[27] In a 2010 study on spectrum interference, the Israeli MoC stated: "*No significant interference (except un-intentional roaming with Jordan and PSE) at the GSM family European frequencies: GSM900M / GSM1800 / UMTS2000M bands.*" (Ministry of Communications, *Wireless Communications: Co-Existence between Israel and its Neighbors*, 17 May 2010).

Figure 14: Mobile 2G coverage of Palestinian operator Jawwal and zoom on Israel / West Bank border



Source: World Bank map based on GSMA Association Map (2015)

Spectrum interference in TV and radio broadcast frequencies

The Israeli authorities have regularly complained of interferences by Palestinian TV and radio stations, and on several occasions intervened to cease the interference[28].

Call termination rates for the Palestinian territories

Israeli operators complain of excessive charges to terminate call from Israel to fixed and mobile lines in the Palestinian territories (figures cited range between $12c to $15c). This hurts both customers in Israel which pay excessive charges, and Palestinian customers which are less likely to receive calls. This situation is asymmetric as the other way round Israeli operators charge Palestinian operators the regulated fixed or mobile termination rate set by the Israeli MoC (the order of magnitude is $1c).

4.3 Specific issues in Gaza

The authority of MTIT in Gaza is an additional issue as it presents several hurdles for the development of the telecommunications sector:

[28] As an illustration, a European Parliament resolution states that on February 2012, "*the Israel Defence Force and the Israeli Ministry of Communication raided two Palestinian television stations*" (European Parliament, 2012). The Resolution explains the views of both sides in these terms: "*the Israel Ministry of Communication said in a statement that it had repeatedly warned both stations that they were using frequencies that violated Israeli-Palestinian agreements and interfered with communication and transmission systems in Israel; whereas a spokesman for the Israeli military said that the interference was affecting aircraft communications at Ben Gurion International Airport; the Palestinian Authority (PA) replied that the Israeli accusations concerning the interruption of flight communications were false, adding that neither itself nor the two television stations had received any warning from the Israeli authorities, and that the two stations were not guilty of any violation of the agreements between Israel and the PA*."

- There is no coordination between the administrative and legal processes between the Palestinian territories. Consultations with private sector stakeholders have revealed concerns related to the "double taxation issue" whereby operators are often asked to pay fees from MTIT and from Hamas (the *de facto* authority in Gaza)[29]. There are informal reports and feedback from existing and hopeful service providers that operators in Gaza are obliged to pay fees or taxes to the *de facto* authority in order to deliver services to citizens, and that licenses are more easily obtained by persons who are members of the *de facto* authority.
- There also seems to be an informal "double licensing" regime in place with operators who obtained a license for the West Bank having to reapply for a "new" license to be able to operate in Gaza.
- According to MTIT, there is little to no oversight of their employees in Gaza. Apparently several dozens Gaza employees on the payroll of MTIT cannot work efficiently – if at all – to deal with ICT issues.
- MTIT does not have control over the Palestinian National Internet Naming Authority (PNINA) – and more specifically over the PNINA servers which are located in Gaza; PNINA is the official domain registry for the Palestinian country code Top-Level-Domain (".ps"). While the absence of MTIT control over PNINA does not currently prevent Palestinian companies to register and operate a website, the absence of control by MTIT poses a double issue:
    - A "principle" issue, whereby MTIT should have oversight over such public ICT matter;
    - A security issue, as Gaza authorities could theoretically shut down websites in the West Bank thanks to their control of the PNINA infrastructure.

In addition to this domestic issue, the domestic and bilateral issues have also taken a major toll on the development of the sector. All operators have highlighted harder constraints on the import of equipment in Gaza.

The Government of Israel (GoI) has imposed a system of entry restrictions that limits the availability of materials and equipment in Gaza. The entry restrictions affect a range of construction materials and operation equipment included in the list of "dual use items". Clearances, or entry permits, need to be obtained from the Coordination of Government Activities in the Territories (COGAT), reporting to the Israel Ministry of Defense. The approval process requires detailed lists of materials, maps of the project location, arrangements of storage and daily supervision, and evidence of proper usage to COGAT for clearance.

Following the recent Gaza war in July-August 2014, the Gaza Reconstruction Mechanism (GRM) has been established based on a temporary agreement between the PA and the GoI, brokered by the United Nations. The GRM has the objective to facilitate entry of construction materials into Gaza. It relies on the establishment of a central database within the PA's Ministry of Civil Affairs (MoCA) to track the material required and delivered to the Gaza Strip. Although the GRM is operational, construction material imported into Gaza continues to be lower than what is needed, even though it has recently increased. While designed in principle to facilitate entry of materials for the reconstruction, practically, near all materials for import into Gaza have been subject to approval through the GRM. This would likely also affect any 'dual use' equipment required for investments in the ICT sector.

[29] President Mahmoud Abbas forged a unity pact in 2014 with Hamas (which currently forms the *de facto* authority in Gaza).

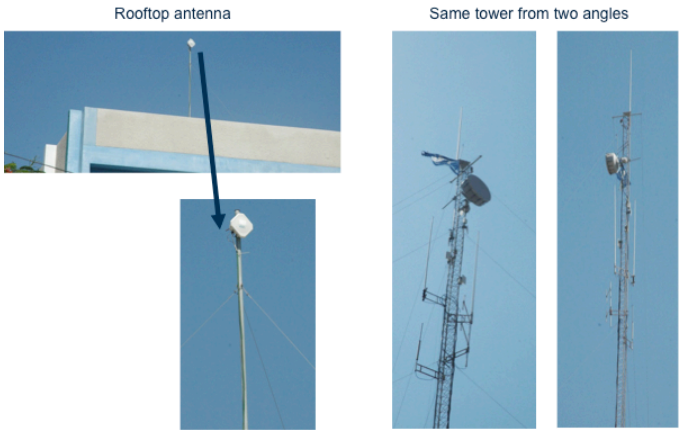
In practice, ISPs report that the same equipment allowed for their operations in the West Bank has not been allowed into Gaza. Wataniya has shared with the mission a comprehensive list of equipment and civil engineering materials that have not been allowed by the Israeli authorities for import into Gaza.

As a result of these restrictions on the import of equipment, Wataniya has not been able to launch operations in Gaza. Gaza does not have competition in mobile, while the West Bank has a competitive market in this segment. The lack of competition is a concern, as the development of the broadband and telecom sector is strictly related to the degree of competition in the market. In addition, there is no competition in backbone. ISPs and broadband operators need to rely only on the infrastructure of Paltel (while West Bank benefits from Wataniya and possibly Bezeq).

In spite of these issues, the household survey commissioned by this report seems to point to a relatively high satisfaction rate for the quality of the Internet in Gaza, where the polled households in Gaza show a higher quality satisfaction than their counterparts in the Jordan Valley.

A possible alternative network, that would benefit the sector and introduce more competition in broadband, is the WiMax network developed by the UN to serve the schools in Gaza. The project was launched in 2006 by the Telecom operator Fusion which implemented the network by using WiMax technology to connect 150 school in Gaza strip with 2 main towers that serve 250 000 students and teachers. The services include UN private portals, mail, and also internet with high scalable and stable internet link. There is an extension planned this year (2015) with 25 new schools that should soon be connected. This operator also serves a few private customers (15) outside the school system.

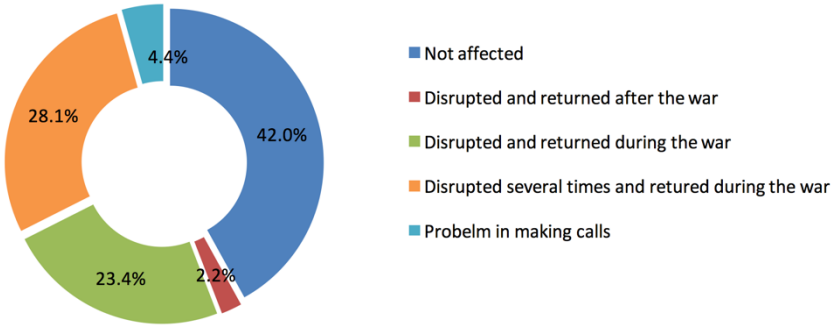
Figure 15: Pictures of the WiMax infrastructure in Gaza



Source: Authors

The customers and the networks in Gaza also suffered from disruptions related to the recent 2014 war. The Alpha International survey provides evidence of this issue. Among the respondents in Gaza that had a mobile phone line during the 2014 war, "*42% said that it was not disrupted during the war; whereas 28.1% indicated that it was disrupted several times and returned during the war, 23.4% stated that it was disrupted and returned during the war, 4.4% indicated that there was a problems making calls, and 2.2% indicated that it stopped and returned after the war.*"

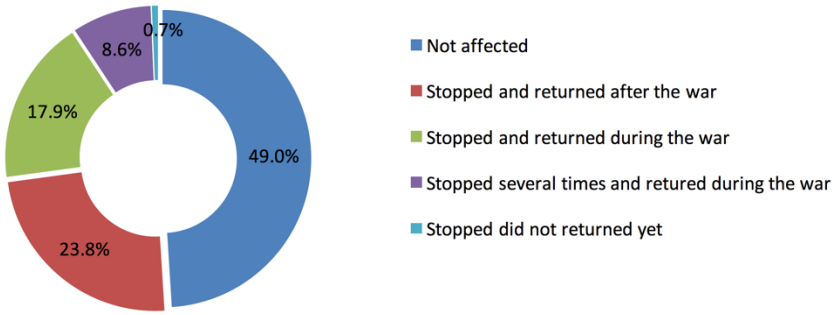
Figure 16: Disruption that occurred to the mobile service in Gaza during the 2014 war (among Gaza respondents that owned a mobile phone line at that time)



Source: Alpha International survey (2015)

As for the fixed broadband service, among the respondents who did have an internet subscription during the 2014 war, "*49.0% indicated that it was not affected by the war, 17.9% indicated that it was disrupted and returned during the war, 23.8% indicated that it was disrupted and returned after the war, 8.6% indicated that it was disrupted and returned several times during the war and 0.7% indicated it was disrupted and has not been returned yet.*"

Figure 17: The type of disruption that occurred to the fixed broadband service in Gaza during the 2014 war (among Gaza respondents that owned an internet access at that time)



Source: Alpha International survey (2015)

4.4 Assessing the impact of mobile market under-development in the Palestinian territories

The impact of all the bilateral and domestic issues listed in this notes on the development of the mobile sector is undeniable. With regards to the impact of bilateral issues, various stakeholders have already performed public calculations in the past.

Previous calculations of impact of bilateral issues

In 2012, the then Minister of MTIT claimed that Israeli mobile operators controlled more than 20% of the Palestinian market share and drained revenues by some $150 million annually (Ma'an News Agency, 2012).

A 2012 World Bank report – "Fiscal Crisis, Economic Prospects" for West Bank and Gaza – mentions estimations performed by Paltel on the fixed market (World Bank, 2012); the estimation is twofold:

- Israeli restrictions on building infrastructure in Area C prevents Paltel to expand its customer base, leading to a lost opportunity of serving around 8,000 potential customers that could generate an additional US$2 million per year in revenues (with a monthly ARPU of $20).
- The tedious and complex Israeli process to get permission to carry out regular maintenance work or network faults repair in Area C prevents Paltel to maintain properly its network and causes quality of service degradation and service disruptions, costing Paltel around US$1.2 million in losses every year.

The 2013 World Bank report ("Area C and the Future of the Palestinian Economy") focused on the West Bank and calculated the impact of annual lost revenues – due to the inability to operate in Area C and the competition of Israeli operators – as well as the annual cost incurred – due to restrictions in Area C –. The report estimated that the total annual foregone value (lost revenues and cost incurred) amounted to $48 millions, with 83% of this foregone value coming from the mobile sector (World Bank, 2013).

As the current report focuses on bilateral as well as domestic issues, this section deals with a high-level estimation of the cumulated impact of both dimensions. In line with the 2013 World Bank report, this Note is of the view that the strongest impact in value is on the mobile market, and thus focuses the estimation on this market.

4.4.1 Direct impact

The direct impact consists in **A) the annual revenue loss** for mobile operators (*lucrum cessans*); and **B) the additional cost incurred** (*damnum emergens*)[30].

A) REVENUE LOSS

The loss is calculated over a period of 3 years (2013 to 2015) to focus on the more recent period and is based on:

- **2013-2015 3G revenue loss on current subscriber base,** i.e. the revenue loss on the current subscriber base due to a lower Average Revenue Per User (ARPU) because of the inability to provide 3G services.
- **2013-2015 revenue loss due to missing additional subscribers,** i.e. the revenue loss due to a lower mobile penetration rate because of the impact of all bilateral (especially the absence of 3G services) and domestic issues. This is calculated by establishing the counterfactual subscriber base and deriving the missing additional 2G and 3G subscribers by comparing it to the current (baseline) subscriber base;

All the sources, rationales and calculation details are provided in Annex 8.3.

1. **2013-2015 3G revenue loss on current subscriber base – Current 2G-only ARPU being lower than the counterfactual 2G/3G ARPU**

If the Palestinian operators had 3G capabilities, they would be able to derive a higher ARPU. Based on international comparison (cf. Annex 8.3), Palestinian operators would be able to migrate half (i.e. 50%) of their customer base to 3G services and the 3G Average Revenue Per User (ARPU) would be 30% higher

[30] For more details on best practices in quantifying impact cf. European Commission, Practical guide on quantifying harm *[SWD(2013)205 accompanying Communication C(2013) 3440]*, 6 Nov. 2013.

than the current 2G-only ARPU. As a consequence, **t**he total revenues of Palestinian operators on their current subscriber base would have been 15% higher (i.e. 50%*30%) if they had 3G capabilities, which represent a total loss in 3G revenues of US$ 212 million for Palestinian operators over the last three years. As the current Value Added Tax (VAT) rate in the West Bank is at 16%, this leads to a VAT fiscal revenue[31] loss for the Palestinian Authority (PA) of US$ 34 million.

2. 2013-2015 revenue loss due to missing additional subscribers – Current subscriber base being lower than counterfactual subscriber base

Because of the absence of 3G services and other bilateral and domestic issues, the Palestinian mobile operators have suffered from a missing additional 3G subscriber base in a range between 250,000 and 1 million over the last three years (the range is based on different benchmarks of peer markets detailed in Annex 8.3), and a similar range for a missing additional 2G subscriber base.

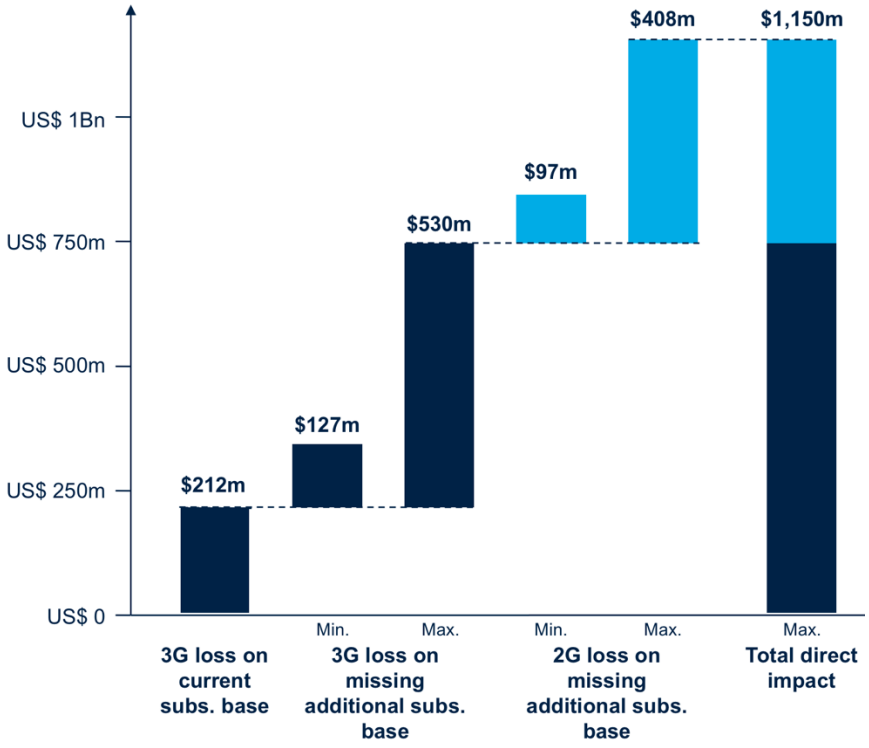
The revenue loss due to missing additional subscribers is thus:

- Between US$ 97 to 408 million of 2G revenue loss on the missing additional 2G subscriber base;
- Between US$ 127 to 530 million of 3G revenue loss on the missing additional 3G subscriber base.

This leads to a total loss of revenues on the missing additional subscriber base between US$ 224 to US$ 938 million over the last three years, and an underlying VAT fiscal revenue loss for the PA between US$ 36 to 150 million.

[31] The loss of corporation tax could be approximately calculated with the Earning Before Tax (EBT) ratio but this ratio is not available for the Palestinian mobile market.

Figure 18: Total revenue loss over the last three years (2013-2015) for Palestinian mobile operators due to the absence of 3G and other bilateral and domestic issues



Source: World Bank calculation (cf. Annex 8.3 for detailed calculation)

All in all, the total 2013-2015 revenue loss for Palestinian mobile operators is between US$ 436 to 1,150 million (of which the revenue loss directly attributable to the absence of 3G is between US$ 339 and 742 million) and the total 2013-2015 Value Added Tax fiscal loss for the Palestinian Authority is between US$ 70 and US$ 184 million.

As the Palestinian GDP was US$ 12.4 billion in 2013 and US$ 12.7 billion in 2014[32], **the direct impact represents between 1.2% to 3.0% of the GDP over the last three years[33].**

B) ADDITIONAL COST INCURRED

The calculation of annual cost incurred would be based on two main factors:

- Additional costs due to (i) the spectrum scarcity and (ii) the inability to deploy access and backhauling infrastructures in Area C. This constitutes an inefficient additional cost for that increases the foregone value for the Palestinian mobile sector.

[32] World Bank indicators, GDP at market price (current US$).

[33] Assuming that the 2015 GPD is equal to the 2014 GDP.

- Additional costs to serve the additional subscriptions calculated in the "revenue loss" section above (such as acquisition cost and core and access network extensions and upgrades). This is a legitimate additional cost reducing the foregone value.

A proper calculation of the annual cost incurred would require a robust cost model – such as a regulatory mobile cost model – that is currently unavailable. However it can be assumed that the inefficient additional costs (due to spectrum scarcity[34] and inability to deploy infrastructure in Area C) outsets the legitimate additional costs (to serve additional subscribers).

C) TOTAL DIRECT IMPACT EVALUATION

All in all, the total foregone value over the last three years (2013-2015) due to absence of 3G and the impact of other bilateral and domestic issues is between US$ 436 to 1,150 million (of which US$ 339 to 742 million directly attributable to the lack of 3G services), and the underlying Value Added Tax fiscal revenue loss for the Palestinian Authority is between US$ 70 to 184 million.

As the Palestinian GDP was US$ 12.4 billion in 2013 and US$ 12.7 billion in 2014[35], the direct impact represents between 1.2% to 3.0% of the Palestinian GDP.

Finally, this direct impact is only focused on the mobile sector, and would be even greater by including the fixed telecommunications sector.

4.4.2 Additional indirect impact

This underdevelopment of the mobile market, coupled with the absence of 3G (which makes the Palestinian mobile market one of the very last in the world to not benefit from 3G) has its toll on the Palestinian economy. A recent study by the GSM Association evaluated the benefits of mobile penetration as well as the specific benefits of 3G, and the results are impressive (GSMA, 2012):

- For a given level of total mobile penetration, a 10 per cent substitution from 2G to 3G penetration increases GDP growth by 0.15 percentage points.
- A doubling of mobile data use leads to an increase in the GDP growth rate of 0.5 percentage points.

If Palestinian operators has 3G capabilities, they would be able to migrate half (i.e. 50%) of their customer base to 3G services (cf. Annex 8.3). Moreover, according to the telecom manufacturer Nokia, an average 3G subscriber consumes over 3 times more data than his/her 2G counterpart[36]. Based on the figures provided by the GSM Association above, the indirect impact of providing 3G to Palestinian consumers and of lifting all the other bilateral and domestic issues would lead to an increase in the GDP growth rate of

[34] On spectrum, the Israeli MoC states that "*in order to achieve the same coverage with the same level of service in the 1800 MHz range versus the 850 MHz or 900 MHz range, nearly double the number of sites is needed*" (MoC, 2014).

[35] World Bank indicators, GDP at market price (current US$).

[36] Nokia, India Mobile Broadband Index 2015.

1.25 percentage point[37]. As the Palestinian GDP was US$ 12.4 billion in 2013 and US$ 12.7 billion in 2014[38], **the indirect impact represents US$ 473 million of missing GDP over the last three years[39].**

Finally, this indirect impact is only focused on the mobile sector, and would be even greater by including the fixed telecommunications sector.

[37] i) as 50% of the subscriber base would migrate to 3G, the GDP growth rate increases by 50%/10%*0.15=0.75 percentage points ; ii) as 3G subscribers consumer 3 times more data than 2G subscribers, the overall mobile data consumption is doubled (3G_consumption*50%+2G_consumption*50%=2*2G_consumption*100%) which leads to an additional 0.5 percentage point increase.

[38] World Bank indicators, GDP at market price (current US$).

[39] Assuming that the 2015 GPD is equal to the 2014 GDP.

5 Conclusions and recommendations

In short, compared to the 2008 situation assessed in the World Bank Telecommunications Sector Note (World Bank, 2008), there has been very slim progress on the bilateral side and noticeable progress on the domestic side. On the bilateral side, spectrum issues emerged as the most important bottleneck for the sector, in the context of an industry that has strongly evolved towards the use of radio resources for data communications. The creation of an independent regulator remains the most important domestic priority, but in some areas (sector liberalization, liberal licensing regime), the authorities have taken positive steps that most countries in the region have still to embrace. Most of the issues identified in the current Note were already mentioned one way or another in 2008, and a high-level assessment of the progress achieved during the last 7 years is provided in the table below.

Table 5: High-level summary of progress and stagnation since 2008

Main issues (2008)	2008 situation	2015 progress
Unauthorized competition and technical coordination	○ Dysfunctional JTC ○ Israeli restrictions on spectrum release and no 3G services ○ Unauthorized competition by Israeli operators ○ Israeli restrictions to import civil and ICT material across borders (especially in Gaza)	○ Dysfunctional JTC ○ Little progress on spectrum with the release of 2G spectrum for a 2nd mobile operator in the West Bank. The release of 3G spectrum has been delayed, placing unauthorized mobile Israeli services at a clear advantage. ○ Still unauthorized competition by Israeli operators; data suggests that their market share has diminished but could rise again as they are able to provide 3G and 4G services and data packages that cannot be matched by Palestinian operators. The presence of aggressive data packages from Israeli operators may also prove to be a competitive challenge for DSL offer. ○ Israeli restrictions to import civil and ICT material across borders (especially in Gaza); difficulties to obtain permits to operate in Area C (infrastructure deployment and maintenance). ○ Restriction on access to international links (possible only through an Israeli-registered company).
Weak Sector Institutional and Regulatory Capacity	○ No independent regulator ○ MTIT is resource constrained ○ Tax collection to be improved ○ Transparency and governance to be enhanced	○ Still no independent regulatory agency. ○ Improvements on the policy side but incomplete implementation (no regulatory authority): • 2009: a Telecommunications Law was approved; the 2009 Law projects the creation of the Palestinian Telecommunications Regulatory Authority (PTRA) • 2010: MTIT published a Statement of National Telecommunications Policy • 2014: MTIT published its ICT Strategy
Promotion of new entrants	○ High entry barriers for new entrants, no competition in mobile	○ Substantial progress for the mobile market: i) a second operator (Wataniya) launched operations in Q4 2009 but still cannot operate in Gaza; ii) MTR decrease based on LRIC model ○ Substantial progress for the fixed market: i) introduction of liberal ISP licensing regime; ii) a form of bitstream access is available; iii) possible access to alternative infrastructure, iv) FTR decrease based on LRIC model

Main issues (2008)	2008 situation	2015 progress
Market dominance	○ Operator dominance (single mobile operator Paltel-Jawwal and dominant ISP Paltel-Hadara)	○ Regulatory framework needs to be strengthened: i) framework to deal with significant concerns by telecom challengers and new entrants regarding dominance of Paltel; ii) no Number Mobile Portability; iii) RIOs to access Paltel's infrastructure

RECOMMENDATIONS ON BILATERAL ISSUES

Reviving the JTC platform. The note recommends the introduction of a revised JTC platform or forum to address bilateral issues. The Oslo principles remain valid, and, if implemented, would create a truly independent telecommunications sector in the Palestinian territories. This agreement would need to include a **comprehensive and long-term agreement on spectrum**, beyond the current agreement on 3G, and including 4G spectrum as well as spectrum for network backhauling and other wireless broadband access technologies, ensuring the Palestinian operators the right to develop independent, facilities-based, networks, and, if they wish, accessing shared passive infrastructure facilities.

The mechanisms for the functioning of the revised JTC should be reviewed to ensure greater trust, efficiency and openness. A thorough review is out of scope of this note, but some suggestions could be explored such as:

- A commitment to meet on a scheduled and regular basis, and with the commitment that meetings should take place as agreed whatever the political context on both sides;
- The inclusion of a trusted and independent third party with legal and technical expertise to review requests and proposals from both side and provide suggestions where relevant;
- The commitment to i) not disclose sensitive or preliminary proposal and information; ii) and conversely to publish public reports and updates on the work and progress of the JTC.

Liberating 3G and 4G spectrum. Competition in the mobile market has been the driver of mobile market growth and innovation in all markets, including in distressed, post conflict environments, and releasing additional spectrum would provide benefits to Palestinian residential and corporate end-users. Leaving a mobile-monopoly market structure in Gaza is unhealthy for competition and Gaza consumers. The absence of 3G/4G spectrum assigned to Palestinian operators is also hurting Palestinian consumers. The Israeli authorities have provided a proposal to allocate dedicated spectrum to the Palestinian operators, as well as spectrum on a shared principle on the 2100MHz band. This proposal is currently under negotiation and consideration by the Palestinian and the Israeli counterparts.

Lifting constraints. Currently the Israeli authorities restrict the layout of microwave links and the import of civil and telecom material – particularly in Gaza – because of security concerns. Top management of Palestinian telecom and ICT companies have repeatedly stated during interviews that it is ready to fully cooperate with Israeli authorities to clear any security concerns. A thorough analysis of lifting security concerns and rationalizing the import process is out of scope of this note, but some suggestions could be explored such as:

- Streamlining the administrative procedure for security clearance with stable, objective, transparent and non-discriminatory criteria to be fulfilled;
- Palestinian telecom and ICT companies providing all the needed clearance forms and proofs;
- Israeli authorities monitoring the use of civil and telecom material– particularly in Gaza – with the possible involvement of a trusted third-party performing a detailed audit on a regular basis to ensure all security concerns are dealt with.

Mitigating the effect of unauthorized telecom activity. The issue of unauthorized Israeli telecom activity in the West Bank has been present through the implementation of the Oslo agreement. Two measures can address this issue:

- Palestinian operators should be able to access similar resources as Israeli operators, in order to be on the same competition ground. This includes accessing sufficient spectrum to deploy independent 3G and 4G/LTE systems (which can be shared with Israeli operators on a voluntary basis); this is a top priority for action;
- An ideal cooperation between Israeli and Palestinian authorities would limit the coverage of Israeli operators in the West Bank. This includes the review of telecom equipment deployed (e.g. micro-cells with a smaller coverage radius can limit the coverage compared to macro-cells)[40]. However, the track record (especially of the JTC) suggests skepticism as to the reach of a solution to limit coverage.

RECOMMENDATIONS ON DOMESTIC REGULATORY AND COMPETITION ISSUES

Creating an independent regulator. The creation of an independent regulator (PTRA) is the top domestic priority, with the setting up of a regulatory framework in line with international best practices. The regulatory framework shall ensure an objective, transparent and non-discriminatory approach with the industry, supported by openness and public consultations.

Passing the telecom law. The Note also urges that Palestinian counterparts to pass the existing law without delay, or with possible amendments to ensure it is consistent with global best practices.

Enhancing the regulatory framework. The creation of an independent regulator with a sound regulatory framework and a supporting telecommunications law is now a standard practice in the world. According to 2013 data from the International Telecommunication Union (ITU), 159 of its 194 member states (82 percent) have a separate ICT regulatory agency. The creation of the PTRA with the setting-up of a regulatory framework and the passing of the existing law will help to enhance competition dynamics thanks to a vibrant wholesale market (e.g. bitstream and unbundling) and sound retail measures aimed at reducing switching costs (e.g. Mobile Number Portability). It would also help to resolve several legal and institutional issues affecting the sector with:

- The monitoring of the market with the institution of a telecommunications observatory.
- The introduction and enhancement of regulatory tools such as market observatory, market definition, identification of Significant Market Power (SMP), remedies definition and enforcements, monitoring and sanctions;
- The enforcement of Reference Interconnection Offers (RIOs) to provide a more dynamic, transparent non-discriminatory and cost oriented wholesale market;
- The assistance in the setting-up of an *ex post* competition department or authority (to complement the *ex ante* regulatory approach) to monitor and approve potential mergers and prevent potential anti-competitive behaviors.

Enhancing capacity and skills. The legitimacy and efficiency of MTIT and the to-be-created PTRA must be supported by the continuing recruitment of skilled workers to keep up with market developments and complex regulatory tools. This remains a challenge as the labor market is small and the salaries in the public sector are lower than in the private sector.

[40] Although the economic impact is much less important, Palestinian operators should also limit their signal reach within Israeli territory.

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8 Annex

8.1 International benchmark of the Palestinian telecom sector

The Palestinian telecommunications market is unique as a number of inputs – such as spectrum for mobile services and backhauling, permits for importing and deploying telecom infrastructure and equipment, and access to international connectivity – rely on an Israeli approval process. A detailed benchmark highlights how these unilateral and bilateral issues affect the Palestinian market, while keeping in mind that domestic issues are also hindering the development of the telecom sector.

8.1.1 Telecom service penetration benchmark

The Palestinian mobile market is among the bottom performers compared to similar countries. Two panels of countries can be set for comparison:

- Panel #1 – All 20 MENA countries;
  - There is only two national Mobile Network Operators (MNOs), whereas the average number in the MENA region is 3 (Israel has now 5 MNOs operating on its market);
  - The mobile penetration among the Palestinian population is estimated at 78% at the end of 2014, compared to a simple average[41] of 123% for the whole MENA region;
- Panel #2 – 18 countries with 2 Mobile Network Operators (MNOs)
  - Because the total number of subscription is highly dependent on the number of MNOs, the Panel #2 is focused on all countries in the world with two MNOs. According to the GSM Association, there are 18 countries in the world with only 2 mobile networks in 2014[42].
  - Compared to this Panel, the Palestinian market (78% population penetration at the end of 2014) is still a poor performer as the simple average of Panel #2 is 105%.

Finally, the Palestinian market is one of the last markets in the world with no 3G: in May 2015, the Global mobile Suppliers Association (GSA) stated that 582 Mobile Network Operators (MNOs) had launched 3G in 216 countries and markets.

[41] The simple average is the average of the penetration rates for the 20 MENA countries.

[42] To be more precise, the countries selected are countries with a population of a least 1 million, this threshold is set to consider markets that are comparable to the Palestinian market as the GSMA include several markets made of islands, remote territories and principalities

Figure 19: Mobile penetration comparison with 20 MENA countries (% population, 2014, average 123%)

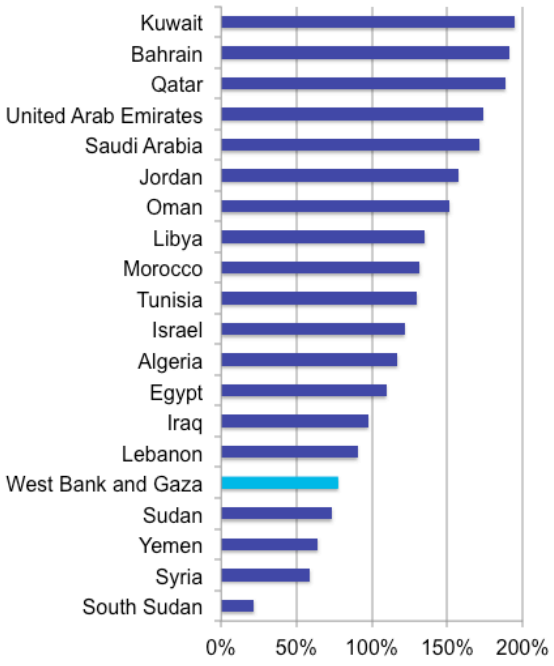
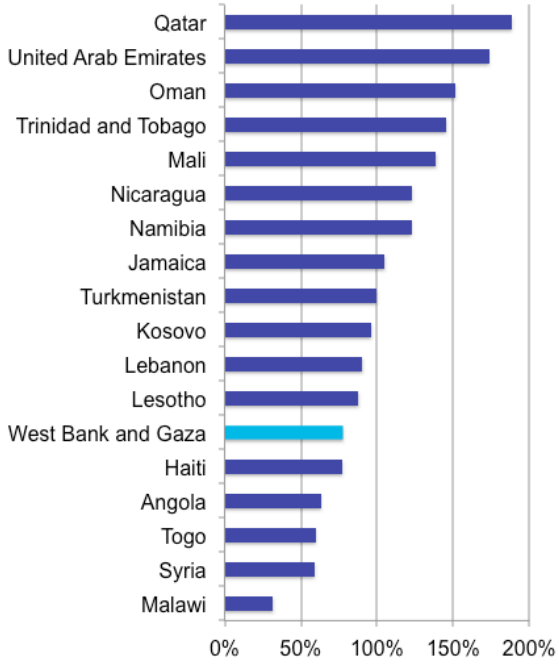


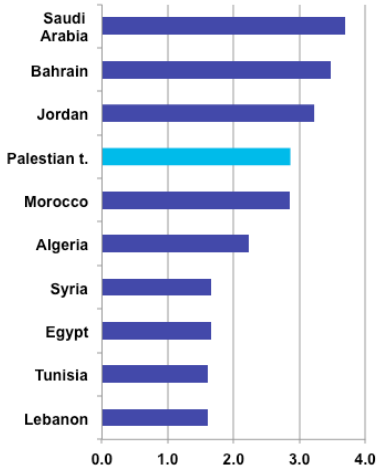
Figure 20: Mobile penetration comparison with 18 countries having 2 MNOs in 2014 (% population, 2014, average 105%)



Source: TeleGeography, 2015

The fixed-broadband penetration is on par with its MENA peers, as the percentage of Palestinian households having a fixed broadband connection being at 29% (the MENA average is 26%). Regarding broadband speed, Palestinian consumers enjoy a good bandwidth compared to other MENA countries, with an average download speed of 3Mbps according to Akamai (an international web company that provides analysis of Internet access parameters).

Figure 21: Download speed by country (Mbps, 2015)



Source: Akamai, 2015

8.1.2 Telecom retail pricing benchmark

The most comprehensive retail pricing benchmark for the MENA region is issued by the Telecom Regulatory Authority of the Kingdom of Bahrain (BTRA), which commissions and coordinates a yearly study on behalf of the Arab Regulators Network (AREGNET) based on the cost of purchasing "baskets" of telecommunications services. The latest study was published in December 2015 (BTRA-AREGNET, 2015), and benchmarked the retail prices as of June 2015. This study allows Arab countries to compare the price levels within and between countries, and also to compare with the OECD countries[43].

For mobile services, Palestinian consumers face one of the most expensive mobile prices. A monthly basket of 40 calls per months and 60 SMS messages will cost an average of $18 per month, which is 60% more expensive compared to an average of $11 per month for the MENA region (PPP and VAT included).When it comes to mobile data, the Palestinian market is by far the most expensive, as having 30 calls per month and 100Mb of 2G data will cost more than $176/month which is six times more than the MENA average ($31/month, PPP and VAT included).These high prices reflect the constraints imposed by Israeli authorities on mobile spectrum as well as 3G and 4G.

For fixed-telephony prices, Palestinian consumers face higher prices than the MENA average with a monthly cost of $44 for 60 calls/month, compared to an average of $29/month for the MENA average (PPP and VAT included). As for mobile telephony, Palestinian consumers do not face significantly higher prices for international calls compared to the average in MENA; by contrast, Palestinian consumers face the highest fixed-to-mobile prices.

For fixed-broadband, a connection with a download speed of at least 2Mbps is 30% more expensive than the MENA average. Finally, the Palestinian price of a Leased Line (LL) is in the MENA average for a 2Mbps circuit.

[43] The baskets are defined by the Organisation for Economic Co-operation and Development (OECD) and the comparison is performed by using Purchasing Power Parities (PPPs), which incorporate both the financial differences between exchange rates, and the differences in the state of the economies as seen through the purchasing power of the citizens in each country. All monetary values in this section are thus expressed in United States dollars with PPP and VAT include

Table 6: Palestinian territories retail price ranking among 20 MENA markets and comparison with MENA average (June 2015, US$/month PPP with VAT included, OECD price comparison methodology and baskets)

Service	Basket (monthly consumption)	2015 Palestinian ranking	2010-2015 Palestinian ranking evolution	Palestinian price	MENA price average	Palestinian price / MENA average
Mobile telephony	40 calls + 60 SMS	17		$ 18	$ 11	1.6
	30 calls + 100 SMS + 100Mb data	19		$ 176	$ 31	5.8
Fixed telephony (PSTN)	60 calls	14		$ 44	$ 29	1.5
	140 calls	14		$ 89	$ 55	1.6
Fixed BB	2Mbps - 10Mbps connection	14		$ 84	$ 62	1.3
Leased lines	2Mbps circuit	10		$ 2 697	$ 2 699	1.0

Note: 20 markets are considered in the MENA region
Source: BTRA-AREGNET, 2015

Another retail benchmarking study is provided by the Arab Advisors Group (AAG, 2015). Based on the retail price of a 4Mbps connection in July 2015, the AAG study shows that the Palestinian broadband price is below the Arab region average (unlike the BTRA-AREGNET study, the AAG does not include the Purchasing Power Parities) and the Palestinian territories ranks at the 8th place out of 19 countries.

Figure 22: Average price of a 4Mbps broadband connection (US$, July 2015)

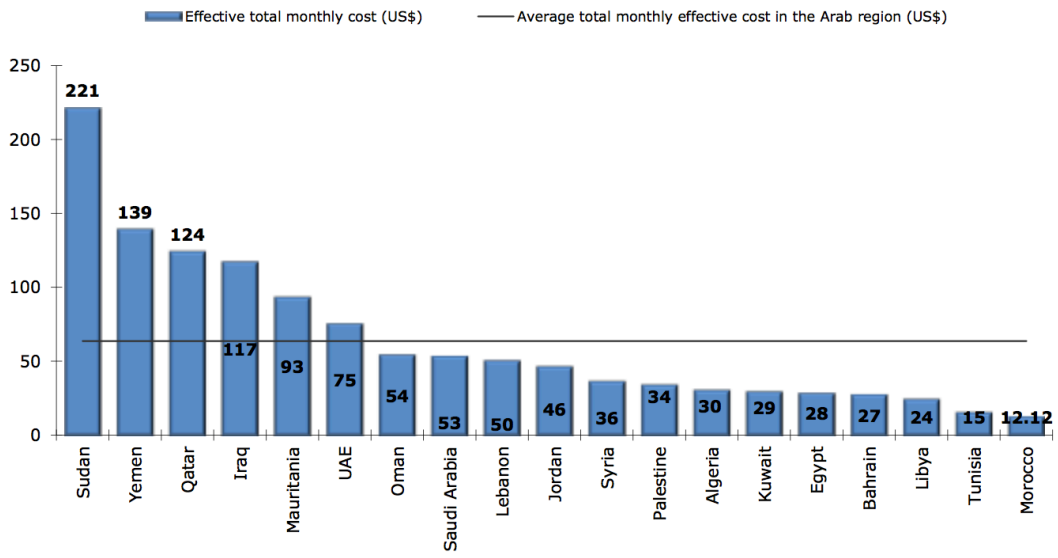


Figure source: Arab Advisors Group, 2015

However, when the retail price of a broadband connection is compared to the GDP per capita, the Palestinian territories ranking drops significantly as the annual fee for a broadband connection represents 13% of the annual Palestinian GDP per capita.

Figure 23: Average price of a 4Mbps broadband connection (% of GDP, July 2015)

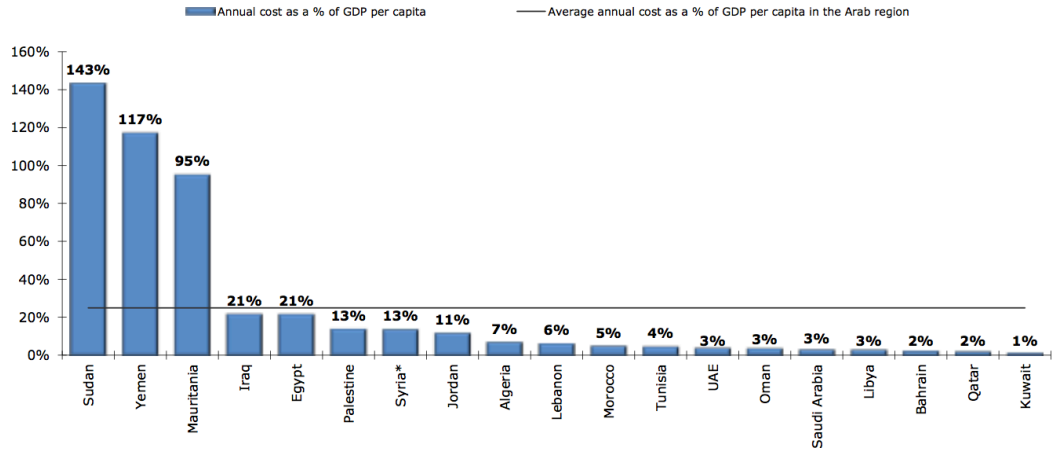


Figure source: Arab Advisors Group, 2015

8.2 Spectrum table assignment

Table 7: Spectrum table allocation for Palestinian and Israeli operators (2015)

		Uplink (UL)		Downlink (DL)		
Band	Operator	Start (MHz)	End (MHz)	Start (MHz)	End (MHz)	Paired MHz (duplex)
"850 MHz"	Pelephone	824.0	835.0	869.0	880.0	**11.0**
"850 MHz"	Cellcom	835.0	845.0	880.0	890.0	**10.0**
"850 MHz"	Pelephone	846.0	847.0	891.0	892.0	**1.0**
"850 MHz"	HOT Mobile					**10.0**
"900 MHz"	Available?	895.0	900.0	940.0	945.0	**5.0**
"900 MHz"	Wataniya	900.2	902.0	945.2	947.0	**1.8**
"900 MHz"	Partner	902.2	910.2	947.2	955.2	**8.0**
"900 MHz"	Partner	910.2	915.0	955.2	960.0	**4.8**
"900 MHz"	Jawwal	910.2	915.0	955.2	960.0	**4.8**
"1800 MHz"	Available?					**7.0**
"1800 MHz"	Cellcom	1 710.0	1 712.0	1 805.0	1 807.0	**2.0**
"1800 MHz"	Cellcom	1 715.0	1 730.0	1 810.0	1 825.0	**15.0**
"1800 MHz"	Partner	1 730.0	1 740.0	1 825.0	1 835.0	**10.0**
"1800 MHz"	Wataniya	1 782.0	1 784.8	1 877.0	1 879.8	**2.8**
"1800 MHz" FDD LTE	Cellcom					**3.0**
"1800 MHz" FDD LTE	HOT Mobile					**5.0**
"1800 MHz" FDD LTE	Golan Telecom					**5.0**
"1800 MHz" FDD LTE	Partner					**5.0**
"1800 MHz" FDD LTE	ExPhone					**5.0**
"1800 MHz" FDD LTE	Pelephone					**15.0**
"2100 MHz"	Available?	1 920.0	1 930.0	2 110.0	2 120.0	**10.0**
"2100 MHz"	Golan Telecom	1 930.0	1 940.0	2 120.0	2 130.0	**10.0**
"2100 MHz"	Partner	1 940.0	1 950.0	2 130.0	2 140.0	**10.0**
"2100 MHz"	Pelephone	1 950.0	1 960.0	2 140.0	2 150.0	**10.0**
"2100 MHz"	Cellcom	1 960.0	1 970.0	2 150.0	2 160.0	**10.0**
"2100 MHz"	HOT Mobile	1 970.0	1 980.0	2 160.0	2 170.0	**10.0**

Source: Spectrum Monitoring, 2015; Schejte, 2006, p.23; MoC, 2014, p.14, MoC 2015

8.3 Direct impact calculation

This annex details the methodology and calculation leading to the quantification summarized in the section § 4.4.1 of the Note.

The loss is calculated over a period of 3 years (2013 to 2015) to focus on the more recent period and is based on:

- **2013-2015 3G revenue loss on current subscriber base,** i.e. the revenue loss on the current subscriber base due to a lower Average Revenue Per User (ARPU) because of the inability to provide 3G services.
- **2013-2015 revenue loss due to missing additional subscribers,** i.e. the revenue loss due to a lower mobile penetration rate because of the impact of all bilateral (especially the absence of 3G services) and domestic issues. This is calculated by establishing the counterfactual subscriber base and deriving the missing additional 2G and 3G subscribers by comparing it to the current (baseline) subscriber base;

1. 2013-2015 3G revenue loss on current subscriber base

If Palestinian operators had 3G capabilities, they would be able to provide data services to their customers which in turn would increase their revenue. The increase in ARPU can be estimated based on several reference points:

- In Japan, the 3G ARPU in 2004 was 43% higher than the 2G ARPU[44];
- In Australia, the 3G ARPU in 2006 was 34% higher than the 3G ARPU[45];
- In Korea, the 4G ARPU in 2013 was 32% to 40% higher than the blended ARPU[46].

Based on these reference points, the evaluation considers that 3G Palestinian subscribers would have an ARPU 30% higher than 2G subscribers.

Assuming that 3G services would indeed be introduced in the Palestinian territories, it would be unreasonable to consider that all the current 2G subscriber base would migrate to 3G services. According to the GSM Association[47], around half of the total mobile subscriber base in the Middle-East has a 3G or 4G price plan. The evaluation thus considers that 50% of the Palestinian mobile customers would subscribe to 3G services.

As 50% of the Palestinian mobile consumers would subscribe to 3G services, and that they would generate a 3G ARPU that would be 30% higher than the 2G ARPU, the overall "blended" ARPU of the whole subscriber base would increase by 15% (i.e. 50% of 30%).

As a consequence, the total revenues of Palestinian operators would have been 15% higher; this translates to a total loss in revenues of US$ 212 million over the last three years, and as the current Value Added Tax (VAT) rate in the West Bank is at 16%, this leads to a loss of VAT fiscal revenue for the PA between $10 and $39 millions[48].

[44] TeleGeography, DoCoMo subscriber gains hit profits, 29 Oct. 2004.

[45] Telecomasia.net, 3G service growth on the horizon, 7 Dec. 2006.

[46] GSMA, 4G driving data usage but not all markets reaping the rewards, 2014.

[47] GSMA Intelligence data.

[48] The loss of corporation tax could be approximately calculated with the Earning Before Tax (EBT) ratio but this ratio is not available for the Palestinian mobile market.

Table 8: Evaluation of 2013-2015 3G revenue loss on current subscriber base

3G Revenue loss on the current subscriber base	2013	2014	2015	Total
Current population (m)	4.2	4.3	4.3	-
Palestinian mobile penetration	80%	78%	80%	-
Current subscriber base (m)	3.3	3.3	3.4	-
Current yearly Average Revenue Per User (ARPU/year, US$)	$ 142	$ 141	$ 138	-
Additional yearly ARPU if 3G was available (15% of current ARPU)	$ 21.3	$ 21.1	$ 20.8	-
Total Palestinian mobile revenue loss on current subs. base (US$m)	$ 71	$ 70	$ 71	**$ 212**
Total VAT fiscal revenue loss on current subs. base (US$m)	$ 11	$ 11	$ 11	**$ 34**

Source: World Bank calculation[49] based on Telegeography and GSMA data

2. 2013-2015 revenue loss due to missing additional subscribers – Current subscriber base being lower than counterfactual subscriber base

The impact of bilateral and domestic issues has led to constraint the growth of the Palestinian subscriber base compared to a counterfactual situation where all these issues are lifted. The counterfactual subscriber base is calculated thanks to a benchmark methodology with peer markets[50]; three panels are set to establish the counterfactual scenario:

- **Panel #1 – All 20 MENA countries;** the Palestinian mobile penetration rate in 2015 is estimated at 80%, compared to a simple average[51] of 126% for the rest of the whole MENA region;
- **Panel #2 *sensu lato* – 18 countries with 2 Mobile Network Operators (MNOs)**
  - Because the total number of subscription is dependent on the number of MNOs, the Panel #2 is focused on all countries in the world with two MNOs. According to the GSM Association, there are 18 countries in the world with only 2 mobile networks in 2014[52].
  - Compared to this Panel, the Palestinian market (80% population penetration) is still a poor performer as the simple average of Panel #2 is 108% in 2015.
- **Panel #2 *sensu stricto* – This panel takes the 18 countries of Panel #2 *lato sensu* and retains only the countries that follow two additional criteria:**
  - Criteria 1 – Comparable GDP per capita (with Purchasing Power Parity – PPP – inclusion) with the Palestinian territories (to ensure that the wealth factor of the population is controlled);

[49] Additional refinement would include i) considering the mid-year subscriber base rather than the end-of-year subscriber base, but the impact on the calculation would be marginal and ii) including an interest rate to update the 2013 and 2014 revenue loss to the year 2015 (i.e. computing present value of past losses).

[50] Relying on benchmarks of peer markets is consistent with international best practices (cf. European Commission, Practical guide on quantifying harm, 2013).

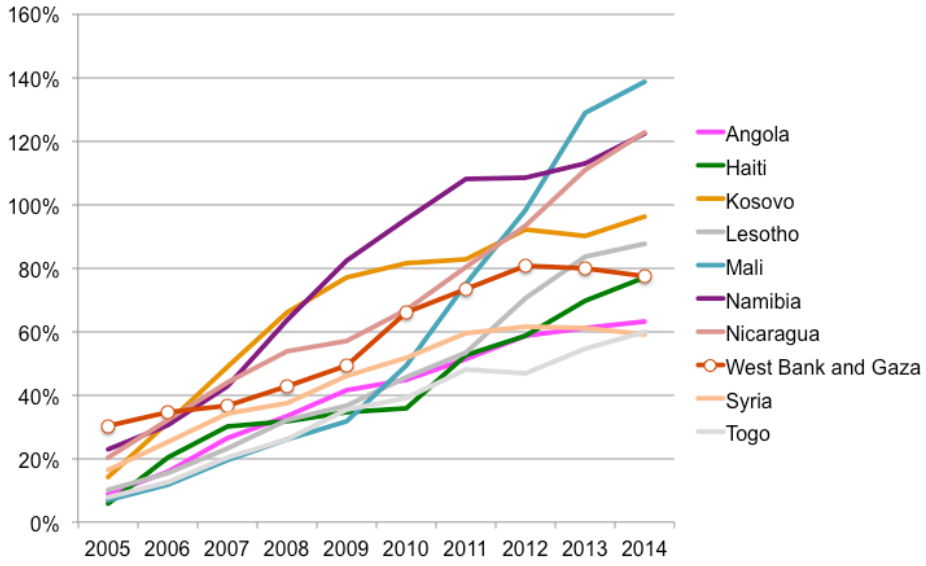
[51] The simple average is the (un-weighted) average of the penetration rates for the 20 MENA countries.

[52] To be more precise, the countries selected are countries with a population of a least 1 million, and this population threshold is set to consider markets that are comparable to the Palestinian market as the GSMA include several micro-markets made of islands, remote territories and principalities

- Criteria 2 – Comparable mobile penetration rate 10 years ago (2005) with Palestinian mobile market (to ensure a similar starting point);
- 10 countries are part of the Panel #2 *sensu stricto*: Mali, Togo, Angola, Lesotho, Kosovo, Syria, Nicaragua, Namibia, Lebanon, and the Palestinian territories.

The evolution of the Palestinian market compared to all the 10 countries in Panel #2 *sensu stricto* is revealing: whereas the Palestinian market was the leader of these 10 countries in 2005 (with a 30% mobile penetration), it lost 5 ranks in 10 years.

Figure 24: Mobile penetration comparison of the Palestinian territories with countries having 2 MNOs, a similar GDP per capita, and a lower starting point in 2005 (% of population, 2005-2014)



Source: TeleGeography, 2015

Because of the absence of 3G services and other bilateral and domestic issues, the Palestinian mobile operators have suffered from a missing additional 3G subscriber base in a range between 250,000 and 1 million over the last three years (the range is based on different benchmarks of peer markets detailed in Annex 8.3), and a similar range for a missing additional 2G subscriber base.

The revenue loss due to missing additional subscribers is thus:

- Between US$ 97 to 408 million of 2G revenue loss on the missing additional 2G subscriber base;
- Between US$ 127 to 530 million of 3G revenue loss on the missing additional 3G subscriber base.

This leads to a total loss of revenues on the missing additional subscriber base between US$ 224 to US$ 938 million over the last three years, and an underlying VAT fiscal revenue loss for the PA between US$ 36 to 150 million.

Table 9: Evaluation of 2013-2015 revenue loss due to missing additional subscribers

Revenue loss due to a missing additional subscriber base	Panel 1 - 20 MENA countries				Panel 2 sensu latto - 18 countries with 2 MNOs				Panel 2 sensu stricto - 10 similar countries with 2 MNOs			
	2013	2014	2015	Total	2013	2014	2015	Total	2013	2014	2015	Total
Average penetration	122%	125%	126%	-	103%	107%	108%	-	87%	91%	92%	-
Palestinian mobile penetration	80%	78%	80%	-	80%	78%	80%	-	80%	78%	80%	-
Difference (%)	42%	47%	47%	-	23%	29%	29%	-	7%	14%	12%	-
Evaluation of missing additional subscriber base (m)	**1.8**	**2.0**	**2.0**	-	**1.0**	**1.2**	**1.2**	-	**0.3**	**0.6**	**0.5**	-
Of which 50% are 2G subscribers (m)	*0.9*	*1.0*	*1.0*	-	*0.5*	*0.6*	*0.6*	-	*0.1*	*0.3*	*0.3*	-
Of which 50% are 3G subscribers (m)	*0.9*	*1.0*	*1.0*	-	*0.5*	*0.6*	*0.6*	-	*0.1*	*0.3*	*0.3*	-
Current yearly 2G Average Revenue Per User (ARPU/year, US$)	$ 142	$ 141	$ 138	-	$ 142	$ 141	$ 138	-	$ 142	$ 141	$ 138	-
Missed 2G mobile revenues on additional 2G sub. base (full year, US$m)	$m 125	$m 143	$m 139	**$m 408**	$m 68	$m 88	$m 85	**$m 241**	$m 20	$m 42	$m 36	**$m 97**
Missed VAT fiscal revenues on additional 2G subs. base (full year, US$m)	$m 20	$m 23	$m 22	**$m 65**	$m 11	$m 14	$m 14	**$m 39**	$m 3	$m 7	$m 6	**$m 16**
Calculated yearly 3G Average Revenue Per User (ARPU/year, US$)	$ 185	$ 183	$ 180	-	$ 185	$ 183	$ 180	-	$ 185	$ 183	$ 180	-
Missed 3G mobile revenues on additional 3G sub. base (full year, US$m)	$m 163	$m 186	$m 181	**$m 530**	$m 89	$m 114	$m 110	**$m 314**	$m 25	$m 54	$m 47	**$m 127**
Missed VAT fiscal revenues on additional 3G subs. base (full year, US$m)	$m 26	$m 30	$m 29	**$m 85**	$m 14	$m 18	$m 18	**$m 50**	$m 4	$m 9	$m 8	**$m 20**
Total Palestinian mobile revenue loss on additional subs. base (US$m)	$m 288	$m 330	$m 320	**$m 938**	$m 157	$m 202	$m 195	**$m 555**	$m 45	$m 96	$m 83	**$m 224**
Total VAT fiscal revenue loss on additional subs. base (US$m)	$m 46	$m 53	$m 51	**$m 150**	$m 25	$m 32	$m 31	**$m 89**	$m 7	$m 15	$m 13	**$m 36**

Source: World Bank calculation based on Telegeography and GSMA data

8.4 Relevant Legal Agreements

8.4.1 Oslo Agreement, Annex III, Protocol on Israeli-Palestinian Cooperation in Economic and Development Programs

The two sides agree to establish an Israeli-Palestinian continuing Committee for Economic Cooperation, focusing, among other things, on the following:

1. Cooperation in the field of water, including a Water Development Program prepared by experts from both sides, which will also specify the mode of cooperation in the management of water resources in the West Bank and Gaza Strip, and will include proposals for studies and plans on water rights of each party, as well as on the equitable utilization of joint water resources for implementation in and beyond the interim period.
2. Cooperation in the field of electricity, including an Electricity Development Program, which will also specify the mode of cooperation for the production, maintenance, purchase and sale of electricity resources.
3. Cooperation in the field of energy, including an Energy Development Program, which will provide for the exploitation of oil and gas for industrial purposes, particularly in the Gaza Strip and in the Negev, and will encourage further joint exploitation of other energy resources. This Program may also provide for the construction of a Petrochemical industrial complex in the Gaza Strip and the construction of oil and gas pipelines.
4. Cooperation in the field of finance, including a Financial Development and Action Program for the encouragement of international investment in the West Bank and the Gaza Strip, and in Israel, as well as the establishment of a Palestinian Development Bank.
5. Cooperation in the field of transport and communications, including a Program, which will define guidelines for the establishment of a Gaza Sea Port Area, and will provide for the establishing of transport and communications lines to and from the West Bank and the Gaza Strip to Israel and to other countries. In addition, this Program will provide for carrying out the necessary construction of roads, railways, communications lines, etc.

6. Cooperation in the field of trade, including studies, and Trade Promotion Programs, which will encourage local, regional and inter-regional trade, as well as a feasibility study of creating free trade zones in the Gaza Strip and in Israel, mutual access to these zones, and cooperation in other areas related to trade and commerce.
7. Cooperation in the field of industry, including Industrial Development Programs, which will provide for the establishment of joint Israeli- Palestinian Industrial Research and Development Centers, will promote Palestinian-Israeli joint ventures, and provide guidelines for cooperation in the textile, food, pharmaceutical, electronics, diamonds, computer and science-based industries.
8. A program for cooperation in, and regulation of, labor relations and cooperation in social welfare issues.
9. A Human Resources Development and Cooperation Plan, providing for joint Israeli- Palestinian workshops and seminars, and for the establishment of joint vocational training centers, research institutes and data banks.
10. An Environmental Protection Plan, providing for joint and/or coordinated measures in this sphere.
11. A program for developing coordination and cooperation in the field of communication and media.
12. Any other programs of mutual interest.

8.4.2 The Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip ("Oslo 2"— 9/28/95) - ANNEX III, ARTICLE 36, Telecommunications

A. General

1. This sphere includes, inter alia, the management and monitoring of the use of the radio frequency spectrum, the use of the geostationary satellite orbit, the planning, formulation and implementation of telecommunications policies, regulations and legal frameworks. The above shall be in accordance with, and subject to, the following provisions:

2. a. In Area C, although powers and responsibilities are transferred to the Palestinian side, any digging or building regarding telecommunications and any installation of telecommunication equipment, will be subject to prior confirmation of the Israeli side, through the CAC.

b. Notwithstanding paragraph a. above, the supply of telecommunications services in Area C to the Settlements and military locations, and the activities regarding the supply of such services, shall be under the powers and responsibilities of the Israeli side.

B. Principles

1. Israel recognizes that the Palestinian side has the right to build and operate separate and independent communication systems and infrastructures including telecommunication networks, a television network and a radio network.

2. Without prejudice to subparagraph D.5.c of this section, the Palestinian side has the right to establish satellite networks for various services, excluding international services.

3. The Palestinian side has the right to establish its own telecommunications policies, systems and infrastructures. The Palestinian side also has the right to choose any and all kinds of communication systems (including broadcasting systems) and technologies, suitable for its future in, inter alia, basic and value added services (including cellular telephony).

4. Operators and providers of services, presently and in the future, in the West Bank and the Gaza Strip shall be required to obtain the necessary approvals from the Palestinian side. In addition, all those operating and/or providing services, presently and in the future, in the West Bank and the Gaza Strip who wish to operate and/or provide services in Israel, are required to obtain the necessary approvals from the Israeli Ministry of Communications.

5. Both sides shall refrain from any action that interferes with the communication and broadcasting systems and infrastructures of the other side.

Specifically, the Palestinian side shall ensure that only those frequencies and channels specified in Schedule 5: List of Approved Frequencies (herein - "Schedule 5") and Schedule 6: List of Approved TV Channels and the Location of Transmitters (herein - "Schedule 6") shall be used and that it shall not disturb or interfere with Israeli radio communication activity, and Israel shall ensure that there shall be no disturbance of or interference with the said frequencies and channels.

6. A joint committee of technical experts representing both sides shall be established to address any issue arising out of this section including the growing future needs of the Palestinian side (hereinafter referred to as "the Joint Technical Committee" or "JTC"). The JTC shall meet on a regular basis for the purpose of solving all relevant problems, and as necessary in order to solve urgent problems.

C. The Electromagnetic Sphere

1. The Palestinian side has the right to use the radio frequency spectrum in accordance with principles acceptable to both sides, for present and future needs, and frequencies assigned or reassigned within the West Bank and the Gaza Strip covering all its required services within the bands L.F., M.F., H.F., V.H.F., U.H.F., S.H.F. and E.H.F. In order to satisfy the present needs of the Palestinian side, the frequencies detailed in Schedule 5 are assigned for the use of the Palestinian side in the West Bank and the Gaza Strip.

2. Future needs for frequencies shall be agreed upon by the two sides. To that end, the Palestinian side shall present its requirements through the JTC which must fulfill these requirements within a period not exceeding one month.

Frequencies or sections of frequencies shall be assigned, or an alternative thereto providing the required service within the same band, or the best alternative thereto acceptable by the Palestinian side, and agreed upon by Israel in the JTC.

3. a. The frequencies specified in Schedule 5 shall serve, inter alia, for the transmission of a television network and a radio network.

b. The television channels and locations of transmitters to be used by the Palestinian side are specified in Schedule 6. The production studios and related broadcasting equipment shall be located in the West Bank and the Gaza Strip.

c. The radio transmitter shall be located in the area of Ramallah and Al-Bireh Cities, at the presently agreed site.

d. The Palestinian side has the right to change the location(s) of radio transmitters according to an agreement between the two sides through the JTC, to serve the Palestinian plans in achieving the best coverage.

D. Telecommunications

1. Pending the establishment of an independent Palestinian telephone network, the Palestinian side shall enter into a commercial agreement with Bezeq - The Israel Telecommunications Corp. Ltd. (herein, "Bezeq"), regarding supply of certain services in the West Bank and the Gaza Strip. In the area of international telephony, commercial agreement(s) shall be concluded with Bezeq or other duly-licensed Israeli companies.

The above shall be without prejudice to subparagraph 5.c below.

2. As long as the Palestinian network is integrated with the Israeli network, the Palestinian side shall use such telephonic equipment as is compatible with the standards adopted and applied in Israel by the Ministry of Communications, and will coordinate with the Israeli side any changes to the structure and form of telephone exchanges and transmission equipment. The Palestinian side shall be permitted to import and use any and all kinds of telephones, fax machines, answering machines, modems and data terminals, without having to comply with the above- mentioned standards (accordingly, lists Al and A2 of Annex V (Protocol on Economic Relations) will be updated). Israel recognizes and understands that for the purpose of building a separate network, the Palestinian side has the right to adopt its own standards and to import equipment which meets these standards (accordingly, lists Al and A2 of Annex V (Protocol on Economic Relations) will be updated). The equipment will be used only when the independent Palestinian network is operational.

3. a. The Palestinian side shall enable the supply of telecommunications services to the Settlements and the military installations by Bezeq, as well as the maintenance by Bezeq of the telecommunications infrastructure serving them and the infrastructure crossing the areas under the territorial jurisdiction of the Palestinian side.

b. The Israeli side shall enable the supply of telecommunications services to the geographically- dispersed areas within the West Bank and the Gaza Strip. This shall include provision, subject to the approval of the proper Israeli authorities, free of charge, of rights of way or sites in the West Bank for microwave repeater stations and cables to interlink the West Bank and to connect the West Bank with the Gaza Strip.

c. Israel recognizes the right of the Palestinian side to establish telecommunications links (microwave and physical) to connect the West Bank and the Gaza Strip through Israel. The modalities of establishing such telecommunications connections, and their maintenance, shall be agreed upon by the two sides. The protection of the said connections shall be under the responsibility of Israel.

4. Without prejudice to paragraph 3 above:

a. The Palestinian side shall take the necessary measures to ensure the protection of the telecommunication infrastructures serving Israel, the Settlements and the military installations, which are located in the areas under the territorial jurisdiction of the Palestinian side.

b. The Israeli side shall take the necessary measures to ensure the protection of the telecommunication infrastructures serving the West Bank and the Gaza Strip and which are located in areas under Israel's responsibility.

5. a. The Palestinian side has the right to collect revenue for all internal and international telecommunication services originating and terminating in the West Bank and the Gaza Strip (except Settlements and military locations).

b. Details regarding payment by the Palestinian side to Bezeq or other duly-licensed Israeli companies, and compensation by Bezeq or the said companies to the Palestinian side, referred to in subparagraph a. above, shall be agreed upon in the commercial agreement(s) between them.

c. The provisions of subparagraphs a. and b. above will be applied between the sides until such time as the two sides agree upon installation and operation of an "international gateway", as well as the international code, for the Palestinian side and the actual commencement of operation of the said gateway.

d. The Palestinian side shall enter into a discussion with Bezeq for the purpose of coming to an agreement for the use of a separate area code and numbering plan, pending the establishment of a separate Palestinian network.

6. The Palestinian side has the right to collect taxes on all telecommunications services billed in the West Bank and the Gaza Strip, subject to the provisions of Annex V (Protocol on Economic Relations).

7. a The Israeli side shall provide the Palestinian side with all operating, maintenance and system manuals, information regarding billing systems and all operating and computer programming protocols of all the equipment that will be transferred to the Palestinian side, subject to protection of rights of commercial confidentiality.

b. The Israeli side shall also supply the Palestinian side with all contractual agreements between the Civil Administration and all domestic and international entities in the area of telecommunications.

The timing of the provision of the above mentioned materials will be as provided for in this Annex.

c. Bezeq, in accordance with the commercial agreement, will supply the Palestinian side with all legal verification of its purported ownership of any and all movable or immovable assets in the West Bank and the Gaza Strip, that are not part of the Civil Administration's present network.

8.4.3 Relevant ITU Resolutions

During recent ITU major conferences such as the Plenipotentiary Conference (PP), the World Radiocommunication Conference (WRC), and the World Telecommunication Development Conference (WTDC), various resolutions related to the State of Palestine were adopted. These resolutions address the: “Status of Palestine in ITU (PP Res. 99 (Rev. Busan, 2014)); “Assistance and support to Palestine for rebuilding its telecommunication networks” (PP Res. 125 (Rev. Busan, 2014)); “Assistance and support to Palestine” (WRC-12 Res. 12) on spectrum-related issues; and “Special technical assistance to Palestine” (WTDC Res. 18 (Rev. Dubai, 2014)). These Resolutions or actions are consistent with Article 36 of Annex III of the Interim Agreement on Telecommunications (Oslo Accord of 1993).

In implementing these resolutions the following actions have been undertaken:

- Connect a School project to promote broadband connectivity in schools located in remote, rural or underserved areas;
- Ongoing project on the establishment of Computer Incident Response Team (CIRT);
- Assistance on spectrum-related aspects, including frequency notification and coordination, technical examinations, transition to digital broadcasting, the digital dividend and the allocation of spectrum and licensing;
- International gateway; and
- Assistance for capacity building through fellowships to facilitate participation of Palestinian delegates to seminars and workshops; and
- Assistance to facilitate participation of Palestinian delegates to ITU meetings, including TDAG and GSR.
- For more details on the provided assistance, a table 2 (Status of implementation) is annexed to this report.

Also, a coordination meeting between the State of Palestine and its neighbouring countries, including Israel, was organized in Geneva from 29 September to 1 October 2014, under the auspices of the ITU, to coordinate the use of spectrum in order to facilitate the transition to digital television and the allocation of the digital dividend to the mobile service.