

Background note on energy and water issues in Palestine¹

Executive Summary

High population growth, increasing living standards and rapid industrial growth has led to tremendous energy demand in the Palestinian territories in recent years. The energy situation in Palestine differs from the situation in other countries in the Southern and Eastern Mediterranean due to the limited availability of primary energy resources,² financial constraints, and the particular political considerations in the area. In addition, Gaza's isolation presents technical challenges in transporting, storing, importing and exporting energy. Palestine is heavily dependent on Israel for meeting its energy requirements. Almost all petroleum products and most of the electricity are imported from Israel and the possibility of diversifying the energy imports from other countries is currently limited. Moreover, the difficult access to energy reflects on debt sustainability of the Palestinian Authority (PA), its capacity to ensure uninterrupted provision of basic services to its citizens with a view to Palestinian statehood, and critically affecting the level of response to the Gaza water crisis.

Energy is increasingly becoming unaffordable for people living in Palestinian areas due to rampant poverty and widespread unemployment. Fuel and energy costs for Palestinians are one of the highest in the region. The electricity sector in the occupied Palestinian territories (oPt) has been undergoing reforms to increase its efficiency but non-payment to the largest supplier, the Israel Electric Corporation (IEC), remains a key challenge that is impacting the overall fiscal situation. The Palestinian Energy and Natural Resources Authority (PENRA)³ has initiated several measures targeted at reducing non-payment, but a comprehensive strategy is needed. The Palestinian territories are highly dependent on electricity provided by the IEC, around 88% of total consumption.⁴ The Palestinian energy market has limited options to develop indigenous sources of electricity and Israeli restrictions have prevented the construction of power networks in large parts of Area C which comprises 60% of the West Bank. Thus, exploitation of renewable energy resources is required at a mass-level so as to ensure a cheap and sustainable source of energy to the Palestinians and reduce dependency on Israel.

Israel has approved in principle the construction of the first Palestinian power station in the West Bank city of Jenin in April 2016. The power station will provide the Palestinian market with 450 Megawatts (MW) at full capacity. It is important to note that in the long term, the power plant in Jenin is supposed to get its gas from a reservoir off the coast of Gaza (Gaza Marine gas field) which belongs to the PA. The Gaza Marine field is not commercially viable for its limited

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² In the occupied Palestinian territories (oPt), energy sources consist of (i) the energy generated by petroleum and natural gas derivatives; (ii) electricity; and (iii) renewable energy.

³ PENRA is responsible for the development and rehabilitation of the internal electricity networks as well as the main electricity lines. PENRA is also in charge of the development of the rural electricity project and the rehabilitation of Gaza's electricity generation station.

⁴ <http://www.worldbank.org/en/news/press-release/2015/04/08/electricity-non-payment-and-arrears-destabilize-the-palestinian-economy>

dimension (only 28 billion cubic meter (bcm), while Israel has still to decide how to exploit a reservoir of 510 bcm, called Leviathan. It could contribute to supply Palestine territories only via an electricity swap with Israel (selling gas to Israel in exchange for electric energy). However, distrust between the parties has so far hindered this potential investment conceived by the British Gas Group. Moreover, Palestinian gas will most likely use both Israel underwater pipeline infrastructure to extract the gas and bring it onshore, and Palestinian gas will have to use Israeli in-land pipeline infrastructure to deliver the gas for end consumers. This translates into an effective and de facto Israeli control over Palestinian gas, similar in nature to the current way by which import levies and taxes are collected and then transferred to PA coffers. The Palestinian Boycott National Committee (BNC), the largest coalition in Palestinian society and the reference for the global Boycott, Divestment and Sanctions movement (BDS), considers any gas with Israel a mistake that would further entrench Palestinian economic dependency on Israel and legitimize prospective Israeli gas deals with other Arab countries, particularly Jordan and Egypt.

The Energy Sector and the potential of Renewables

Palestine is a net importer of oil and petroleum products. Total energy consumption in the Palestinian Territories is considered the lowest in the region, while its costs are relatively high compared to its neighbours. The largest portion of the different types of imported fossil fuels consumed in the Palestinian Territories originates from Israel, while the remainder comes from Jordan and Egypt. The energy provided by the three sources, however, does not meet the power needs of the Palestinian Territories.

According to Palestinian officials, current demand for electricity in the West Bank and Gaza Strip is 1,200 MW. Demand is expected to grow to 2,000 MW by 2020. According to the IEC, Israel's installed generating capacity is 13,248 MW. This is nearly 100 times current indigenous Palestinian generating capacity. In its country note on Palestine, The U.S. Energy Information Centre said that: **“in 2010, the Palestinian Territories generated only 445 million kilowatt hours of electricity, enough to meet just 10% of demand.”** Electricity imports, mainly from Israel, accounted for the remaining 90% of demand.

The electricity distribution system in the West Bank thus requires substantial investment to cope with expanding demand. In 2007, the World Bank estimated losses during distribution to be around 25%. An equivalent figure for Jordan was half this, and for Israel it was around 3%.

The result is that the Palestinian areas of the West Bank are almost fully dependent on IEC for the supply of electricity, with the exception of the Jericho area which is connected to the Jordanian and Israeli grids. The Jordanian grid, however, was and remains weak in its ability to fulfil Palestinian demand—this is largely the result of interruption in the supply of gas due to the repeated bombings of the pipeline between Egypt and Jordan in Sinai.⁵ It is important to note that the West Bank itself has no power plant. The Gaza Strip's dependence, however, is lessened by the electricity generated from the Gaza power plant. The Gaza power plant started operations

⁵Since the 2011 uprising that toppled former President Hosni Mubarak, there have been dozens of confirmed attacks by different militant groups on energy pipelines in the Sinai Peninsula, repeatedly forcing a halt in gas supplies to Jordan, as well as to Israel.

in 2002. Although it has a capacity of 140 MW, it has been operating at around only 60 MW. An additional 30 MW has been supplied to Rafah by Egypt, and 120 MW supplied by Israel. The total supply, around 210 MW, is much less than estimates of demand in the Gaza Strip, which are in the order of 450 MW.

Currently, the IEC provides around 650 megawatts (MW) of electricity to the West Bank and 120 MW to the Gaza Strip. Expansion projects to the grid in the West Bank come as Palestinian dependence on Israeli electricity has been an ongoing point of contention between the two parties for years. Israeli authorities have withheld tax revenues collected on behalf of the PA in the past over unpaid bills owed to Israeli companies. Just recently, the IEC cut off power for about one hour to a number of Palestinian municipalities over debt owed by the PA amounting to more than 1.7 billion NIS (\$447.8 million). The move was denounced at the time as amounting to collective punishment. Egypt supplies merely 17 MW of electrical power to the Gaza Strip while 20 MW is supplied to Jericho by Jordan's state-utility firm.

Seeking alternative sources of energy is necessary in order to diversify electricity sources and promote energy independence. There have been several projects and initiatives aimed at achieving energy security such as the restructuring of the Palestinian Hydrocarbon Sector, implementing the prepaid meter project to ensure efficient energy consumption, upgrading relevant laws and regulations, developing gas and petroleum production, and the exploitation of the Gaza Marine offshore gas field. Special attention was paid, however, to the exploitation of renewable energy resources. Exploitation of renewable energy resources could ensure a cheap and sustainable source of energy to the Palestinians and reduce dependency on Israel, as the goal is to reach the point where Palestine generates 50% of its power locally by 2020.

Renewable Energy

It is important to note that the major renewable energy resources in Palestine are solar, geothermal and biomass. The Palestinian Energy Authority is currently in the process of launching the bid for solar and wind energy resource mapping and geospatial analysis. Palestinian Energy Authority said it plans to auction permits to build 10 solar plants as large as 10 MW each, with winning bids awarded to developers pledging to generate the lowest cost electricity—the Palestinian solar tenders will include 10 MW of grid-connected solar projects for each of its 11 governorates and will total 110 MW over the next four years. The solar projects are part of the PA's increasing focus on renewable energy as an alternative to unreliable and more expensive energy imports from Israel. Officials expect as much as 600 MW of new solar power and natural gas generation installed at a cost of as much as \$800 million over the next four years. A further 35 MW of solar capacity is to be added to the grid under a new metering system. The 35 MW will be split between commercial, public and residential sectors. The projects will be eligible for soft loans from the \$50 million Palestinian Solar Fund. As part of the PA's net-metering program, Palestine will also provide credit for any excess electricity generated with no cap, according to Dr Omar Kittaneh, Minister of the Palestinian Energy Authority. It is important to note that the government is also preparing two 50 MW solar photovoltaic (PV) projects. Kittaneh said the entire program would save Palestine more than \$90 million. "We see [renewables] as not just a huge source of energy, but also as saving lives," he said.

In the last few years, the Palestinian Authority with the support of the donor community committed to initiate a comprehensive restructuring of the electricity sector. An extensive reform process began which led to the establishment of robust institutions and provided the Palestinian Territories with one of the best structured markets in the Middle East. In 2009, the Palestinian Authority issued the electricity law (number 12) which formulates this institutional set up and started with its implementation. The electricity law, however, does not give strong support to renewable energy. There is only one disposition stating the importance of renewable energy in the West Bank and Gaza Strip. No annexes or implementation directives to the law have been issued.

Objectives of this law are:

- To regulate and develop the electricity sector in Palestine.
- To simulate the domestic and foreign investments in the electricity sector to provide adequate electricity supply at the lowest prices.

The Palestinian Energy and Natural Resources Authority (PENRA) initiated several measures especially targeted at reducing electricity non-payment but a comprehensive strategy is needed. PENRA, the Palestinian Energy and Environment Research Centre (PEC)⁶, and the Palestinian Electricity Regulatory Council (PERC)⁷ are the authorities responsible for promoting and supporting renewable energy in Palestine.

Climate Change

On 17 March 2016, Palestine upgraded its status from “Observer” to “Party” to the United Nations Framework Convention on Climate Change (UNFCCC), becoming its 197th member. This follows the deposit of Palestine’s instrument of accession on 18 December 2015, announced during the closing statements at COP21.

The full membership is likely to substantially change the way the PA has been dealing with climate change threats so far. Not only will it have the opportunity to advance national needs and interests in international talks, but it will also have access to a set of resources previously precluded. As an observer, Palestine could not count on the financial support of the Global Environmental Facility (GEF); a financial mechanism under the convention for Non Annex I parties, providing financial support to prepare national communications, participate in the meetings of the UNFCCC (COPs & MOPs and other negotiation meetings) or to strengthen the capacity of competent authorities. Access to the GEF was limited to the Small Grant Programme. Similarly, Palestine was excluded by Clean Development Mechanism (CDM) projects not being Party to the Kyoto Protocol.

It is important to note that there is quite a bit of discussion as to how this will affect the climate process. When Palestine joined UNESCO in 2011, the United States reacted to the decision by suspending their funding to the Paris-based institution, accounting for almost a fifth of its annual

⁶The Palestinian Energy and Environment Research Centre, established in 1993, is affiliated with the Palestinian Energy Authority. It conducts a range of research on increasing the efficiency of energy usage and developing renewable energy in the Palestinian Territory.

⁷PERC was established in 2012 in order to regulate the energy sector.

budget. Up to date, it is not clear whether Palestine's participation as a state party to the UNFCCC will trigger similar opposition.

Although not elevated to a national priority, climate change is also given consideration within the National Development Plan 2014-2016 which identifies the promotion of effective adaptation strategies among its most important policies. At the institutional level, responsibilities on climate change issues and on environmental protection/conservation are assigned to the Environment Quality Authority (EQA) within the Palestinian Government, in cooperation with the Ministry of Agriculture and the Palestinian Water Authority according to agreed planning priorities.

Electricity Issues in Gaza

Mohammed Thabet, director of public relations at Gaza Electricity Distribution Corporation said that there are three sources of electric power supply in Gaza: 10 power lines from Israel with 120 MW, two power lines from Egypt with 30 MW, and Gaza's local power plant (GPP) that generates 60 MW⁸—due to a shortage of gas needed in operating the station. These sources combined, which provide 210 MW of electricity, do not meet the population's power supply needs that equal a total of 450 MW, which would rise to 600 MW if the Israeli blockade was lifted. This implies an ongoing power deficit of 55%.

Gaza's sole power plant, which was bombed by Israel in July 2014, was temporarily forced to shut down in April due to a shortage of funds to replenish its fuel reserves, triggering blackouts of 18-20 hours per day. The capacity of the Energy Authority in Gaza to purchase fuel to run the plant has been undermined since the beginning of 2016, following a change in the arrangement with the West Bank-based Ministry of Finance, which provided the power plant with a full exemption on fuel taxes. The scope of this tax exemption had been gradually reduced since January, significantly increasing the cost of fuel. Thabet said that as of January, the PA Ministry of Finance has cut its subsidies for Gaza's fuel costs by nearly 50%. The Gaza Strip, however, will be exempt from paying fuel tax this summer, marking a temporary resolution to on-going tax disputes. Palestinian official Jamil Mizhir said that several meetings were held with Palestinian Minister of Labor Mamoun Abu Shahla before the Palestinian leadership decided that Gaza would receive exemptions of between 80 to 100 per cent off the fuel tax which was supposed to start on the 1st May through to the end of the summer. Mizhir said that exemption was not a permanent solution but would guarantee Gaza eight hours of electricity per day.

The impact of the electricity shortage has also led to a reduction in the supply of water to households. The UN estimated that water supply has reduced from approximately 80 litres per person per day to 55 litres. Crucially, Gaza's five water treatment plants have had to shorten their treatment cycles due to the electricity shortage, which has had the negative impact of decreasing the "quality of sewage discharged into the sea," the UN said. The potential shut down of sewage pumping stations also exacerbates the risk of back-flow and flooding of raw sewage onto streets. According to the UN Office for the Coordination of Humanitarian Affairs (OCHA), over 70% of households in Gaza receive 6-8 hours piped water once every two to four days and large areas of Gaza experience 12-16 hours a day electricity blackouts. Israel meanwhile restricts items such as pumps, drilling equipment and disinfectant chemicals.

⁸<http://www.reuters.com/article/us-palestinians-gaza-solar-idUSKCN0WB1OC>

To overcome the electric power crisis, 40-solar-powered lights were installed by the Palestinian Energy Authority in a number of main streets and at intersections in Gaza City. The Authority is currently deploying solar cells on empty floor spaces - the first project of its kind for the generation of 30 MW of electricity. The project was expected to be completed in December 2015, but the obstacles caused by Israel, most notably preventing the import of the necessary materials, have hindered its completion so far.

Increasingly, solar energy is used as an alternative source of electricity generation in the Gaza Strip, which continues to suffer from the ongoing power crisis. It is important to note that Gaza has an average of 320 days of sunshine a year, making solar energy an attractive alternative power source. While many hospitals, health care centres, schools and public outdoor spaces use solar energy, only households in affluent neighbourhoods have access to this expensive alternative. Access to solar power requires buying solar panels for \$300, a rechargeable battery to store the power generated and a transformer for \$600. This will allow a 300 watt-power generation that will provide light in the house and power the TV for eight hours. Yet running electrical equipment such as refrigerators and washing machines requires solar cells worth \$7,000. Israel imposes obstacles to the import of solar cells and prevents their supply to Gaza without permission from the Israeli army, through authorized dealers. This is the reason why they are extremely rare in the Gaza market at present. Some also argue that solar power in the Gaza Strip cannot be a substitute for the main sources of power supply, as Gaza's total area is 356 square kilometres, which means that there are not enough empty spaces for a large number of solar panels.

EU-Palestine Cooperation

In the energy sector, the EU continued to assist the PA in reducing the burden of net lending originating from the electricity sector. **The Palestinian Electricity Transmission Company** was established in February 2014, following the earlier establishment of electricity distribution companies and of the Palestinian Electricity Regulatory Council (PERC). Four new supply substations and a control centre in Palestine were also being developed to increase Palestinian control over electricity loads imported from Israel and to help reduce the purchase tariff paid to the Israeli Electricity Company.

In May 2014, the mandate of PENRA was extended to the hydrocarbon sector. The European Union (EU) has contributed to a study for the restructuring of the Palestinian Hydrocarbon Sector. A final workshop of the study was organized by the EU and PENRA on 12 January 2016, with the participation of the PA Energy sector stakeholders and donor community.

Through this 19-month EU funded project, the PA roadmap for the restructuring of the hydrocarbon sector has been designed and discussed. This roadmap comes in line with the PA priorities that were also adopted by the EU Strategic Support Framework 2014-2016 for Palestine. The roadmap identifies clear roles, responsibilities and mandates for the different hydrocarbon sector institutions.

"Palestinian energy security is and will continue to be a concern for the European Union. We believe that an efficient Palestinian energy sector is crucial for Palestinian development and economic prosperity," said the EU Head of Cooperation Alessandra Viezzer. "In the last few years, the EU has supported a number of initiatives in the energy sector including the institutional set up and operationalization of the Palestinian Authority Electricity Sector, and the update of the Sustainable Energy Strategy 2015-2020."

PENRA, with the aim of consolidating the policy and legal framework of reference for the Energy sector, has also worked together with the EU technical consultants to update the Energy Strategy 2011-13 to ensure that all aspects of the newly designed hydrocarbon sectoral reform are included.

As of August 2015, PENRA jointly with all relevant PA institutions, among them the Ministry of Finance and Planning and the Environmental Quality Agency, is working on drafting the Sustainable Energy Law.

Impact of Recent Gas Findings on Palestine

In 2010, the US Geological Survey (USGS) estimated that the Levant Basin,⁹ one of the 8 basins at the Eastern Mediterranean region, may contain natural gas resources exceeding 3455 billion cubic meters (bcm)—122 trillion cubic feet (tcf). Recent discoveries of large hydrocarbon resources have redefined the energy landscape in the Middle East. The deposit discovered in 2015 in the Egyptian offshore waters, the Zohr gas field of around 850 bcm, is probably the largest offshore basin in the world. The Israeli gas fields ***Tamar*** and ***Leviathan*** (with 283 and 510 bcm respectively) discovered in 2009 and 2010, have altered Israel's geostrategic position as a regional gas power.

The drilling partners behind Israel's Leviathan gas reservoir¹⁰ have sealed their first export deal for the basin in 2014¹¹—a \$1.2 billion sales agreement with the Palestinian Power Generation Company (PPGC). According to the agreement, PPGC had to buy around 4.75 bcm of gas for a period of 20 years, to fuel a future power plant in Jenin with a 200 MW capacity.¹² The PPGC was established to provide a domestic source of electrical power to the West Bank through imported Israeli gas.¹³

⁹The Levant Basin Province spans from the Nile Delta Cone below the south west of Israel and the Gaza Strip, to the Tartus Fault north of Lebanon, and the Eratosthenes Seamount in the northwest, off Cyprus in the Mediterranean Sea, and the Levant Transform Zone, bordering the West Bank, Israel, Jordan, Lebanon and Syria.

¹⁰The partners exploring the Leviathan field—the **Delek Group** (45%) and **Ratio Oil Exploration** (15%), both Israeli companies, and **Noble Energy** (40%), a US company

¹¹The contract was signed in the American Colony Hotel in Jerusalem in January 2014 between Minister of the Palestinian Energy Authority Omar Kittaneh, Delek Group controlling shareholder Yitzhak Tshuva and senior company officers, and representatives of Noble Energy and Ratio.

¹²<http://www.jpost.com/Enviro-Tech/Leviathan-partners-sign-first-gas-export-agreement-with-Palestinian-power-firm-337174>

¹³The gas field is only 1 tcf, but the Tamar and Leviathan fields are close to 30 tcf. Meaning, they are much larger with the capacity for significant exports.

The deal, however, was reportedly cancelled in 2015. Several inconsistent reports came out over the reason behind the cancellation. The Leviathan partners, according to the Globes, explicitly stated that the cancellation of the contract was because the Israel Antitrust Authority had failed to grant approvals, delays in approvals for the development of the Leviathan field, and lack of other regulatory approvals. The Palestinians cancelled the deal after both Delek¹⁴ and Noble¹⁵ failed to meet the requirements set in the contract signed in January of last year. But, the deal also fell due to contradictory economic interests stemming from the position of Palestine Investment fund (PIF), interested in the development of the Gaza Marine Field due to its 10% share in it, PADICO¹⁶ and their interest in generating profit through the importation of Israeli gas and the provision of electricity through the newly established Palestine Power Generation CO, as well as the BDS movement and their criticism of the deal which generated heated public discussions making this issue one of intense domestic political debate.

The BNC considered this deal as a strategic mistake that would further entrench Palestinian economic dependency on Israel and legitimize prospective Israeli gas deals with other Arab countries, particularly Jordan and Egypt. The BNC confirmed that ending the Palestinian gas deal with Israel pulls the rug from under the feet of any Jordanian official supporting the purchase of “Israeli gas” under the pretext of “we shall not be more Palestinian than the Palestinians themselves.” Mahmoud Nawajaah, BNC General Coordinator, commented: “the import of Israeli gas would contribute to entrenching our economic dependency on Israel and strengthen the Israeli economy at a time when Israel’s international isolation is growing.” The BDS Campaign said “any deal was not acceptable politically or economically, nor was it acceptable for Palestinian private sector key investors to make occupation profitable.” In any case, as stated before, the development of Palestinian domestic resources, barely viable for their small amount, would in any case require an active role of Israel.

New Deal: Power Plant in Jenin

Israel has approved in principle the construction of the first Palestinian power station in the West Bank, expected to be built in the Jenin Industrial Zone, near the Gilboa-Jalame checkpoint. The Palestinian power station, which will take four years to build, will provide the Palestinian market with 450 MW at full capacity. The Prime Minister’s Office issued the approval after PIF led by a confidante of President Mahmoud Abbas and former Deputy Prime Minister Mohammed Mustafa, submitted a request through the Israeli Coordinator for Government Activities in the Territories (COGAT).

It is important to note that in the long term, the power plant in Jenin is supposed to get its gas from a reservoir off the coast of Gaza (Gaza Marine gas field) which belongs to the PA, though its natural gas has yet to be exploited. In both cases, Israel would maintain effective control over the gas either through being the provider or through the Israeli infrastructure that will be used in the gas transportation from Gaza (Gaza Marine field) or Ashdod (Leviathan gas field) to Jenin. It is clear, at least for now, that PIF prefers the gas from Gaza option.

¹⁴**Delek Energy Systems Ltd.**, through its subsidiaries **Avner Oil Exploration L.P.** and **Delek Drilling L.P.**, is Israel's premier oil and gas exploration company.

¹⁵**Noble Energy** is a petroleum and natural gas exploration and production company headquartered in Houston, Texas.

¹⁶**Private company**: main investors in the Palestine Power Generation Co. which signed the deal with Delek and Noble.

In 1999, the PA granted a 25-year licence to British Gas Group (BG) to explore natural gas in the Mediterranean Sea off the Gaza coast. In 2000, BG discovered two gas fields in commercial quantities: (i) Gaza Marine, which extends over 22 miles along Gaza's coast; and (ii) Noa South, which is shared with Israel. The Gaza Marine field is commercially viable and could help diversify Palestinian demand for electricity and energy away from Israel, while generating an important revenue stream for the PA. The 2012 annual report of the PIF noted that the value of the natural gas off Gaza depends "largely on global prices" but put a total value at "several billion dollars." It noted that about \$100 million had been invested so far in the project with total exploration and developments projected to reach \$800 million. The PIF valued the Gaza Marine gas project at more than \$7 billion and estimated it would cost more than \$700 million to develop.

The exploitation of the field necessitates Israeli approval due to several interlocked factors. First, any exploitation needs Israeli navy approval and general supervision. Second, Palestinian gas will most likely use both Israel underwater pipeline infrastructure to extract the gas and bring it onshore, and Palestinian gas will have to use Israeli in-land pipeline infrastructure to deliver the gas for end consumers. This translates into an effective and de facto Israeli control over Palestinian gas, similar in nature to the current way by which import levies and taxes are collected and then transferred to PA coffers. Such arrangements, while seemingly beneficial, will place the PA and its leadership under more pressure when and if Israel decides to stop the transferring of gas. Moreover, this is likely to generate domestic criticism by the civil society and general public, who will blame the leadership for "continuing its policy of acquiescing to Palestinian dependence on Israel."

When it comes to the impact of the gas findings, there are many factors involved. Having cheap gas whether Palestinian or Israeli gas means that the PA could start operating gas based power plants that could radically transform the "revenue" base for the PA and lower electricity prices, which significantly help in enabling the PA to meet its outstanding commitments and will help in lowering the marginal cost of production in the territory due to the lower electricity prices. The recent discoveries are also placing international pressure on Israel to loosen its stance on the Gaza field and allow for its exploitation. In fact, one can read the recent contracts signed with Israel for the power plant in Jenin and talks regarding the Gaza field as the start of bilateral process towards finalizing a deal that would enable the Palestinians to exploit the gas field. On the other hand, the PA wanted to export gas to Israel, the new discoveries mean that Israel will not need these exports—the Palestinians could lose a potential customer.

Regional findings also create opportunities for Israel to deepen its relationship with Greece, Cyprus and Turkey, as well as with countries like Jordan and Egypt as they move towards regionalizing production and consumption of Eastern Mediterranean gas. This means that the Palestinian factor is negligible within the regional context of major infrastructure and joint-projects relating to gas exports or possible deals with various countries.

EuroAsia Interconnector

Cyprus, Greece and Israel have held a tripartite meeting on 28 January 2016 in Nicosia¹⁷ and decided to form a trilateral committee to explore the possibility of building a natural gas pipeline between Israel and Cyprus and on to Greece for gas exports to Europe. The viability of this project is seriously undermined by its cost (USD 17-20 billion) and its limited capacity (14 bcm). The recent discovery of the Zohor deposit in the Egyptian waters makes other areas more attractive.

Plans are proceeding to create an undersea electricity cable to Europe and a deep sea study is now being completed following data collected by a specialized Italian vessel. This stage is considered an essential part of the project's preliminary process so as to examine all possible routes and decide on an optimal path for the submarine cable. Once completed, the deep sea study will be followed by the establishment of a techno-economic feasibility study, and, within 2017, a finalized investment decision. The cable should cost 2 billion and bring 2000 MW to Greece. However difficult technological issues and viability concerns to be tackled.

Both of these are included in **EU's projects of common interest (PCI)**¹⁸, a list of **195 key energy infrastructure projects** the Commission describes as essential for reaching the EU's energy policy objectives of affordable, secure and sustainable energy. PCIs may benefit from access to financial support totalling €5.35 billion from the Connecting Europe Facility (CEF) from 2014-2020. The funding is intended to speed-up the projects and attract private investors. However, the recent situation of depressed oil prices discourages the market from co-financing expensive energy investments in this juncture.

The EuroAsia interconnector would in theory be the first energy bridge between Europe and Asia. It is conceived to link the electrical systems of Israel, Cyprus and Greece (via Crete) through sub-marine DC cables and HVDC onshore stations in each country/location, and will have a capacity of 2000 MW. The project is supposed to create an energy bridge between the two continents with a total length of the interconnector being approximately 1520 km, and an alternative corridor for transferring electricity to Europe.

Palestinian civil society organizations argue that the development of an energy trade with Israel will hamper efforts to hold it to account for its violations of international law.¹⁹ It is possible that Palestinian and European civil society organizations would mount a campaign against any EU-Israel cooperation regarding gas or energy on the basis that it would constitute a significant upgrade in EU-Israel relations. The EU has previously committed to not engaging in any major upgrade of EU-Israel relations until there is significant progress in the peace process. The Palestinian BDS National Committee has stated it is deeply concerned by the support that the EU is planning to give to Israel to help it become a major natural gas exporter as "this would be a significant upgrade in EU-Israel relations that will send Israel the message its war crimes against Palestinians will be tolerated. Many Europeans will be appalled at the idea of Europe becoming dependent on gas exports from Israel and the changes in political dynamics that would create."

¹⁷<http://mfa.gov.il/MFA/PressRoom/2016/Pages/Israel-Greece-Cyprus-hold-trilateral-parliamentary-meeting-3-Mar-2016.aspx>

¹⁸<https://ec.europa.eu/energy/en/topics/infrastructure/projects-common-interest>

¹⁹<https://bdsmovement.net/2015/palestine-power-generation-company-withdraws-from-israel-gas-deal-13065>

Water Issues²⁰

The Palestinian population in the West Bank and Gaza is one of the fastest growing in the world and its demand for water is increasing. Access and distribution of water in these territories has been an issue within the context of the Israeli-Palestinian conflict since 1967. In 1995, the Oslo II Accord adopted a quantitative approach to the water issue, detailing the quantities to be allocated to Israel, the West Bank and Gaza, but did not sufficiently take into account the natural, political and socio-economic developments that have affected water supply and demand in the region since. Economic disparities, lack of substantial and sufficient infrastructure and of effective water resources management, compounded by pollution and climate change have led to disproportionate allocation of water and to substantial depletion and contamination of water resources.

²⁰Information on water issues in this note is based largely, though not exclusively, on the EPRS paper on *Water in the Israeli-Palestinian conflict* available in full at: [http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573916/EPRS_BRI\(2016\)573916_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573916/EPRS_BRI(2016)573916_EN.pdf)

Water consumption by Israelis and Palestinians reflects stark inequalities. Due to the allocations of trans-boundary water resources agreed upon under Oslo II, Israel currently controls approximately 80% of water reserves in the West Bank.

Background

The Israeli-Palestinian interim agreement signed in September 1995 (Oslo II) includes the last mutual arrangement concerning water in the West Bank and the Gaza Strip, and is the most detailed to date. According to the agreement, 80% of water extracted from the Mountain Aquifer would serve Israel and the remaining 20% would serve Palestinians. Palestinian water supply would come from two sources:

- Continued extraction of some 118 million cubic meters (mcm) a year from existing drills in the West Bank
- Development of new drills to extract water from the only previously unutilized source in the West Bank, the eastern basin of the Mountain Aquifer,²¹ yielding some 70 to 80 mcm a year. Until the development, Israel was to immediately begin supplying the Palestinians with approximately 25 mcm of water a year.

In the absence of a final status agreement, the Oslo Accords, meant to be valid only for five years, are still in place today. Yet even so, the measures set forth are only partially satisfied: while Israelis receive an unlimited water supply, Palestinians receive only about 75% of the stipulated quota. This situation is the result of several reasons, one being that under the temporary accords, Palestinians were to obtain some 118 mcm from independent drilling points, whereas in practice Palestinians yield only 73% of that amount. They fail to reach the designated amount due to technical problems and outdated equipment, drop of water level at several locations, and overestimation of the available underground water when the agreement was signed in 1995. Independent Palestinian drilling in the eastern basin of the Mountain Aquifer was never developed as planned, due both to Israeli restrictions and to failed test attempts. Even though Israel's national water company Mekorot sells Palestinians 53 mcm of water a year – twice the amount stipulated in the Oslo Accords – it is a far cry from meeting demand.

West Bank

At present, West Bank residents are completely dependent on the Mountain Aquifer as the source of natural fresh water. The PA does not desalinate or treat water for agriculture, which is an important part of the Palestinian economy. In addition, one third of water supplied to the West Bank is lost due to aging infrastructure and leakages. Since 1967, when Israel's national water company, Mekorot, took control of the West Bank's water resources, to meet their needs its residents have had to purchase water extracted from the Mountain Aquifer²². According to most sources, water consumption by Israelis and Palestinians in the West Bank reflects stark

²¹The Mountain Aquifer is the largest and highest-quality water resource in the region. It is divided into three basins: the Western Aquifer Basin (WAB), the North-Eastern Aquifer Basin (NEAB) and the Eastern Aquifer Basin (EAB). Approximately 80% of its recharge area is from rainfall in the West Bank (WAB), according to a report by the Israel Water Authority.

²²The Mountain Aquifer provides about a quarter of the water used by Israel, including its settlements in the West Bank.

inequalities. Average domestic and urban water consumption – not including industrial usage – in Israel is about 183 litres per person per day, while Palestinians have access to 73 litres per person per day – considerably lower than the 100 litres of water per person per day recommended by the World Health Organization (WHO). The said amount is meant to be enough for both domestic consumption as well as use by hospitals, schools, businesses, and other public institutions. However, modern urban systems require greater amounts of water. According to estimates by Israeli and Palestinian water experts, the amount needed to maintain a reasonable quality of life is about 150 litres per person per day. In some areas of the West Bank located in Area C, where Israel has full military control, some communities survive on as little as 20 litres per person per day. The Palestinian Central Bureau of Statistics and the Palestinian Water Authority (PWA) report that only 73.5% of families in the West Bank consider their water to be good enough to drink. The development of intensive modern agriculture by Israeli settlers in the Jordan Valley has led to an increase in their relative consumption of water.

Although most Palestinian communities are now connected to a central water network, there is simply not enough water to supply running water 24/7. Accordingly, Palestinian authorities provide water by rotation. Palestinian residents must deal with water shutoffs for days and sometimes even weeks at a time – the problem is exacerbated in summer. Moreover, around 200,000 people in the West Bank rural areas (approximately 70 villages) have no connection to the water network and rely on tinkered water to meet their basic needs. They pay up to 400% more for every litre than those connected to the water network. Moreover, due to the low quantities of water available to Palestinian farmers, only 6.8% of the cultivated land in the West Bank is irrigated²³.

Gaza Strip

Gaza's population gets most of its water from the Coastal Aquifer, as the Gaza Strip has no substantial quantities of surface water. As consumption rates exceed those of replenishment, sea water from the Mediterranean seeps in, creating a saline level higher than that recommended by the WHO guidelines for safe drinking water. The EU and UNICEF estimate that 90-95% of the water in the Gaza Strip is unfit for human consumption. According to the Palestinian Water Authority, the aquifer is also threatened with exhaustion by 2020. In 2014, the Human Rights Committee raised concerns about the situation of the Gaza Strip residents and their access to water. Only 5.8% of families living there consider their water to be good enough to drink. Some Palestinians in Gaza have come to rely on purchasing drinking water from private vendors who have set up small, unregulated desalination plants. Desalination of water is an expensive enterprise due to its dependence on electricity. In 2009, Amnesty International described the emergence of this private enterprise as a “stop-gap” solution, which the vast majority of Palestinians could not afford.

This is crucially linked to the lack of infrastructure and resources for wastewater management. According to a study by the European Environment Agency (EEA), waste-water management in this area is mostly limited to sewage networks and cesspits. The wastewater collection network does not cover all villages and communities. Just over half of households are connected to the

²³ [http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573916/EPRS_BRI\(2016\)573916_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573916/EPRS_BRI(2016)573916_EN.pdf)

sewage collection system, although there is a notable increase in the trend. The first regional wastewater treatment plant, a World Bank-managed project, was completed in northern Gaza in early 2014, but is still not operational. The 2014 Gaza war, also known as Operation Protective Edge, led to the destruction and damage of two major sewage treatment plants and to 20-30% of the sewage and water networks, leaving nearly half a million people without running water, according to Human Rights Watch.

A significant part of Gaza's water demand is covered by purchases. Israel sells an average of 4.7 mcm of drinking water to Gaza, delivered through two grid connections: the Bani Suhaila connection east of Khan-Younis, and the Ben Said connection east of Deir el-Balah. Limited water supply has, however, led to very high prices. A third Israeli pipeline connection at Nahal Oz, which runs into northern Gaza, was also completed in 2014. The International Fact-Finding Mission on Settlements estimated in 2013 that Mekorot supplies almost 50% of the water consumed by communities in the West Bank and Gaza.

The European Union and UNICEF opened in March 2014 a project to **build a desalination plant** to turn seawater into fresh drinking water in the Gaza Strip, at a cost of an estimated 10 million euros (\$11.7 million). Work is ongoing to establish this station that would provide 20,000 cubic litres of desalinated water to 75,000 people in Gaza by 2016. Work in this station will continue to expand until the production reaches 150,000 cubic litres of water per day in 2017, so as to meet the water needs in the southern and central provinces of the Gaza Strip. With regard to the residents of the Gaza governorate and the North Gaza governorate, there is another station being designed and established under international supervision. The station aims at producing 10,000 cubic litres of drinking water per day by 2016, to provide services for these two governorates.

The European Parliament has expressed ongoing concern about the water situation in the West Bank and Gaza, inter alia through its 2014 resolution on “Israel-Palestine after the Gaza war and the role of the EU” (2014/2845(RSP)), in which it urged all EU institutions to encourage “water relations” between Israel and its neighbours. In his 2014 speech to Israel's Parliament, the Knesset, European Parliament President, Martin Schulz, referred specifically to the issue of limited access to water for Palestinians compared to Israelis. In the period 2008-2013, the European Commission, through its Directorate-General for Development and Cooperation – EuropeAid (DG DEVCO), committed nearly €55.4 million to water and sanitation projects for Palestinians. Following the 2014 Israeli offensive, the Commission's Directorate-General for Humanitarian Aid and Civil Protection (ECHO) has been providing humanitarian assistance, including trucking safe water into Gaza and the West Bank. The new EU programming document, the 2014- 2015 Single Support Framework signed by the EU and the Palestinian Authority, includes water development as one of its main focus areas.

Desalination Facility Project

On 15 February 2016, the Secretariat of the Union for the Mediterranean (UfM) organized a meeting in Brussels with the participation of the Government representatives of Palestine, Israel and representatives of both the European Commission and the Office of the Quartet to advance

on the implementation of the Desalination Facility project for the Gaza Strip, endorsed by the 43 Member States of the UfM in 2011. The meeting prepared the ground for the upcoming High-level Donor Conference in June 2016, with the overall goal of securing the funding to start the construction of the desalination facility.

The largest-scale desalination facility is aimed at addressing the water crisis in the Gaza Strip, where 95% of the water is not drinkable due to the over-pumping of the Coastal Aquifer, the only available water source in the strip. The desalination of water from the Mediterranean would substantially alleviate the over pumping of groundwater from the Coastal Aquifer which underlies the Gaza Strip as a clear environmental benefit. This outcome aligns with the strategic objectives of the UfM in protecting coastal aquifers, especially when considering it is accompanied under a Palestinian Water Programme by the development of new wastewater treatment plants in Gaza which shall actively prevent the further pollution of the Mediterranean as well as the Coastal Aquifer.

The UfM noted that “the Israeli Delegation confirmed its government's political support for the project and its commitment to facilitate the construction of the facility” and “the Palestinian Delegation emphasised its readiness to take all necessary measures for the project's implementation.”

