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Energy Resources and Regional Cooperation in the East Mediterranean

by Nicolò Sartori, Lorenzo Colantoni
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ABSTRACT

The recent emergence of the Eastern Mediterranean as a new energy-exporting region was unexpected, but its true potential remains unexplored. The gas reserves discovered in the territorial waters of Israel, Cyprus and Egypt are already contributing to the energy security of these countries. Nevertheless, regional disputes, involving virtually all future gas producers as well as the planned transportation routes, the novelty of the discoveries and the political and economic risk associated with further exploration threaten the sector's future development. East Mediterranean gas reserves can potentially be useful to the EU, which aims to diversify its energy suppliers, but are fundamental to fuel the energy demands of such countries as Egypt and Turkey, whose economic stability is key to the political balance in the region.

Natural gas | Pipelines | Egypt | Cyprus | Israel | Eastern Mediterranean

keywords

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Introduction: The East Med gas potential

The surge of the East Mediterranean as a future gas-exporting region after the discovery of major gas fields in Israel (Tamar 2009; Leviathan 2010), Cyprus (Aphrodite 2011) and Egypt (Zohr 2015) is a fairly recent concept, which is subject to change due to uncertainty over the actual gas reserves and thus the difficulty of evaluating the financial viability of their full exploitation. Virtually all of the future gas development projects must be carried out in the framework of regional cooperation, since none of the Eastern Mediterranean countries – with the exception of Egypt – could afford to construct the necessary export infrastructure separately as a result of financial restraints in relation to the size of individual gas reserves.

The growth of gas demand in Egypt as well as the gas supply diversification strategies high on the EU agenda form the two main export trajectories of the Eastern Mediterranean gas.

Both Israel and Cyprus expect to begin gas delivery around 2020,¹ aimed not only to supply the domestic market but also for export. Supplying gas to Turkey (for its own demand as well as for transit), albeit potentially an economic option, is currently unlikely in the context of fractured political ties with practically all future gas producers of the East Mediterranean.

¹ Theodoros Tsakiris, "The Gifts of Aphrodite: The Need for Competitive Pragmatism in Cypriot Gas Strategy", in Angelos Giannakopoulos (ed.), *Energy Cooperation and Security in the Eastern Mediterranean: A Seismic Shift towards Peace or Conflict?*, Tel Aviv, Daniel Abraham Center, February 2016 (Research Papers 8), p. 35, <https://dacenter.tau.ac.il/publications>.

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The discovery of the Aphrodite gas field (about 200 bcm of estimated reserves²) in the exclusive economic zone (EEZ) of Cyprus in 2011 brought a wave of political enthusiasm fostering plans for the construction of an LNG export facility in Vassilikos, later dismissed due to insufficient gas reserves for the project's bankability. Doubts over the actual size of the field create an obstacle for designing an exploitation and export plan; however, even in case of as little as 90 bcm of actual gas reserves, Cyprus could satisfy its domestic gas demand (an estimated 0.7-0.95 bcm/year) for 20-30 years³ as well as exporting some of it to Egypt, which is currently viewed as the main future market for the Cypriot gas due to its size as well as geographical proximity. The risk of exporting gas to Egypt is its low domestic gas price, which could as a result incentivise Cyprus to divert its gas exports to Europe through the existing (albeit underused) LNG facilities of Idku and Damietta in Egypt in order to achieve a higher profit margin.

Since Israel alone could not bear the costs (both financial and security-related) of building an LNG terminal, the potential export options for the Israeli gas reserves (likely in combination with the Cypriot gas supplies) from both the Tamar (8 bcm annual gas flow and 280 bcm reserve⁴) and in particular the Leviathan (620 bcm⁵) fields are Turkey, the EU and Egypt. However, the decades-long Turkish-Cypriot conflict is preventing the construction of a gas pipeline to connect the Leviathan field with Ceyhan in Turkey, since the pipeline would have to cross the EEZ of Cyprus. The export of Israeli and Cypriot gas to the EU gas market through pipelines connecting in Greece is unlikely in the short to medium term due to extremely high construction costs involved in relation to the supply expected.

Rapidly growing gas demand in Egypt, as well as the recent discovery of the Zohr field, which has increased the total national gas reserves to 2,180 bcm⁶ – significantly more than the Israeli and Cypriot reserves put together – makes Egypt the major regional player in the gas sector and the potential catalyst of the Eastern Mediterranean gas hub. In addition to exploiting its own natural gas resources, Egypt is likely to start importing gas from the Cypriot and Israeli gas fields by 2020, which could partly offset the current expensive spot-market LNG imports, which Egypt needs in order to satisfy its domestic demand.

² EIA, *Overview of Oil and Natural Gas in the Eastern Mediterranean Region*, 15 August 2013, <https://www.eia.gov/beta/international/regions-topics.cfm?RegionTopicID=EM>.

³ Ibid.

⁴ Shaul Zemach, "Israel's Exploitation of Hydrocarbons: Status Quo or Quo Vadis?", in Angelos Giannakopoulos (ed.), *Energy Cooperation and Security in the Eastern Mediterranean: A Seismic Shift towards Peace or Conflict?*, Tel Aviv, Daniel Abraham Center, February 2016 (Research Papers 8), p. 64.

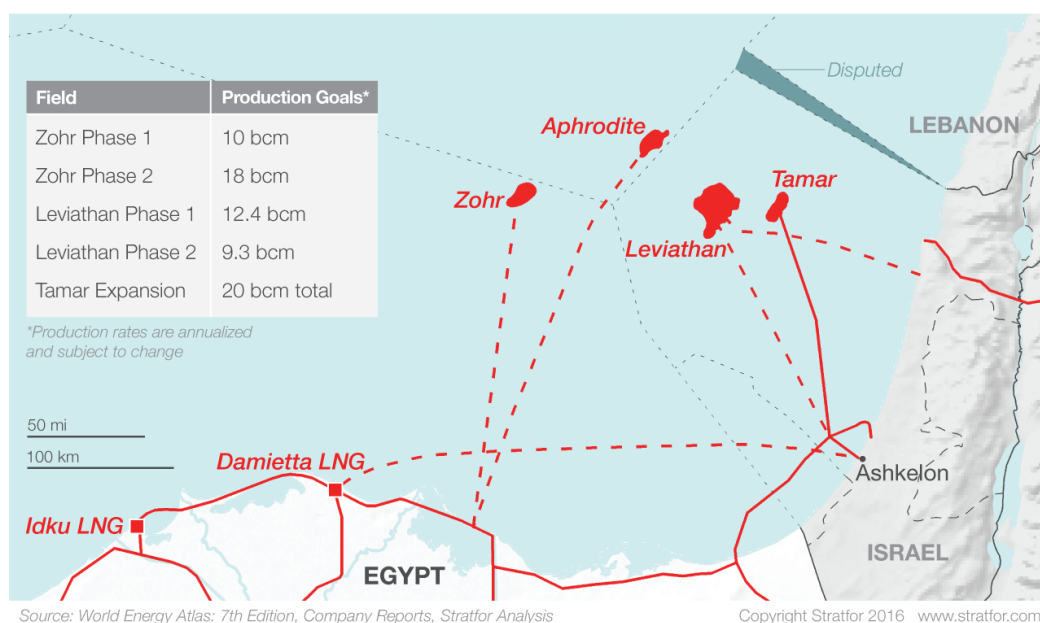
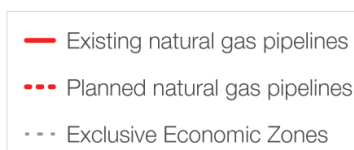
⁵ Simone Tagliapietra, "Will the European Market Need East Mediterranean Gas?", in Angelos Giannakopoulos (ed.), *Energy Cooperation and Security in the Eastern Mediterranean: A Seismic Shift towards Peace or Conflict?*, Tel Aviv, Daniel Abraham Center, February 2016 (Research Papers 8), p. 106.

⁶ Theodoros Tsakiris, "The Gifts of Aphrodite: The Need for Competitive Pragmatism in Cypriot Gas Strategy", cit., p. 34.

In light of continuing gas exploration in the Mediterranean, potential discoveries in the Greek as well as the Lebanese EEZ are possible too. This would of course shift the plans for the region's gas exports, however not without addressing the political obstacles of designing the export routes first. Gas discoveries in Israel and Cyprus are likely to push Turkey to resume peace talks with the island-country, in order to reap some of the benefits of the Eastern Mediterranean gas supplies and as a result diversify from dependence on Russian gas.

Eastern Mediterranean Gas Potential

Egypt is attempting to establish itself as the regional hub for natural gas development. At least initially, much of this gas will feed Egypt's growing demand, which is currently roughly 50 billion cubic meters per year.



Source: Stratfor, *Egypt Positions itself at the Center of a New Energy Market*, 16 September 2016, <https://www.stratfor.com/image/egypt-positions-itself-center-new-energy-market>.

1. Egypt, Zohr and the challenges of the internal market vis-à-vis export strategies

Egypt has a longstanding tradition in the hydrocarbon sector. The beginning of the Egyptian oil industry, in fact, dates back to 1886, when the first crude was extracted from the Ras Gamsah field in the eastern desert, while natural gas production started only at the beginning of the 1990s. By the 2000s, Egypt's gas production was progressively exceeding the internal demand, transforming the country into a net exporter supplying Jordan and Israel via the Arab Gas Pipeline (AGP), and the global gas markets through the 19 bcm/year offshore LNG terminals of Idku and Damietta. In this period, the hydrocarbon sector was a vital source of foreign currency and a key destination for foreign direct investment. Starting

from 2010, however, Egypt's natural gas production started declining and exports progressively dropped to meet the rising domestic demand, forcing the country to abandon its exporter status in 2015 and to start importing gas supplies from abroad at global prices.

The discovery of the Zohr super giant gas field, off the Egyptian coast in the East Mediterranean, promises to resurrect the country's gas posture. Zohr, in fact, hosts 850 bcm of natural gas,⁷ and will be able to produce about 20-30 bcm a year for two decades. Eni's super giant field alone would produce the equivalent of 40 percent of Egypt's 2015 natural gas output. Along with the extraordinary Zohr discovery – the largest ever made in the Mediterranean Sea – Eni and BP have found other relevant gas resources in the Baltim and Nooros offshore fields, and Shell in the Alam El-Shawish concession in Egypt's western desert.

Despite these extraordinary findings, Egypt's capacity to export natural gas will largely depend on the government capacity to manage an uncontrolled domestic demand. In the last two decades, Egypt's energy consumption has grown dramatically due to the country's economic boost, demographic expansion and mounting appetite for electronics and air conditioning, driven also by generous public subsidies. Amounting to about 20 percent of government budget, these kept prices artificially low and energy efficiency measures almost impossible to implement. Between 2000 and 2012 overall energy consumption in Egypt rose by 5.6 percent per year, with gas demand growing by 8.7 percent.⁸ Today natural gas accounts for 50 percent of the country's primary consumption⁹ and contributes around 70 percent of its electricity mix,¹⁰ a dependence that resulted in recurrent peak electricity shortages for the population and the industrial sector in the summer months.

The government's attempts to cope with this unsustainable trajectory are far from being fully successful. Although the decision to apply most of the natural gas supply cuts to heavy industry – mainly taken to prevent popular discontent – has contributed to a partial slowdown of growth in gas demand, public initiatives to phase out the subsidies to the national energy sector and to introduce a gas market reform appear to be still on hold. The discovery of huge gas reserves in the East Mediterranean, although positive in terms of addressing the enduring imbalances in the Egyptian energy sector as well as avoiding major electricity disruption and possibly fostering economic growth, risks further slowing this weak reform process.

⁷ Anna Shiryaevskaya, "Egypt May Return to Gas Exports After Discovery, Snam Says", in *Bloomberg*, 30 June 2016, <http://bloom.bg/29extF6>.

⁸ Nikos Tsafos, "Egypt: A Market for Natural Gas from Cyprus and Israel?", in *GMF Foreign and Security Policy Paper Series*, October 2015, p. 2, <https://shar.es/1EeIVh>.

⁹ BP, *Statistical Review of World Energy 2016*, June 2016, <http://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>.

¹⁰ "Power Sector Consumes 70% of Egypt's Gas", in *Natural Gas Asia*, 10 December 2015, <http://www.naturalgasasia.com/power-sector-consumes-70-of-egypts-gas-17213>.

In this situation, it is very likely that the large majority of Zohr's production – expected to begin in 2018 – would be allocated to domestic consumption, leaving limited room for contributing to Egypt's export capacity. But Egypt has strong interest in reviving its export activities, either counting only on its domestic production or cooperating with Israel and Cyprus to exploit its existing offshore LNG infrastructure, positioning itself as the catalyst for the so-called East Mediterranean gas hub. The preliminary deal between Cairo and Nicosia for the realization of a subsea pipeline connecting Aphrodite resources to Egypt's export terminals, signed in August 2016, further contributes to putting the country at the centre of regional energy cooperation. In the meantime, intensive exploration activities in the Egyptian waters continue, reinvigorated by the recent encouraging discoveries, while the Ministry of Petroleum – also thanks to a new gas price policy aimed at attracting foreign investments in the national hydrocarbon sector – expands its cooperation with international companies in different parts of the country.

2. Cyprus, territorial disputes and the development of energy resources

The context for Cyprus gas is almost opposite to that of Egypt: with no history in the hydrocarbon sector and virtually no gas consumption (more than 94 percent of its electricity is generated from oil¹¹), the pressure on the country's energy sector is almost all external. Indeed, the possibility of new and greater discoveries, the tensions in the north with Turkey and the Turkish Republic of Northern Cyprus (TRNC), the need to consolidate its energy partnerships in the south with Israel, Egypt and Lebanon and to end its isolation via LNG and a gas pipeline open new possibilities even while casting shadows on the country's energy future and its aspiration as an energy hub.

Cyprus did not have proved oil or gas resources until 2011, the year in which the US energy company Noble discovered the Aphrodite gas field in block 12, the southernmost part of the Cypriot offshore concession area. The volume discovered is significantly smaller than Zohr, being around 200 bcm and thus circa one fifth of the Egyptian field.¹² Yet, this value is likely influenced by the recent start and the limited size of the exploration activities conducted until now, particularly due to the unclear definition of the EEZs between Cyprus and its neighbours. While these have been settled with an agreement with Egypt in 2003, with Lebanon in 2007 (even if this has still to be ratified by the Lebanese Parliament¹³) and earlier

¹¹ European Commission, *Country Reports accompanying the document Progress towards completing the Internal Energy Market* (SWD/2014/0311), 13 October 2014, p. 38, <http://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52014SC0311>.

¹² EIA, *Overview of Oil and Natural Gas in the Eastern Mediterranean Region*, cit.

¹³ Laura El-Katiri, "Political Dialogue to Facilitate the Development of Energy Resources in the East

with Syria and Israel, they are still unsettled with Turkey and the TRNC. Foreign companies' interest in exploration is however strong: the first licensing round, which led to the discovery of Aphrodite, was shortly followed by two others which gathered significant attention, the last receiving bids also from ExxonMobil and Qatar Petroleum in July 2016.¹⁴ The two companies, which had previously not shown interest in Cyprus resources, add to the already existing contracts with Delek, Eni, Noble, Total and Shell.

Potentially, Cyprus holds a set of advantages in becoming a gas hub, if compared to Turkey, its closest rival; despite being farther from Central Asian gas reserves, it is closer to Southern Mediterranean fields. Its small domestic market, with limited possibilities of growth, avoids making domestic consumption a cumbersome competitor to exports (as in the case of Turkey and Egypt). In addition to owing domestic resources, which are completely absent in Turkey, Cyprus has a preferential lane towards the EU gas market thanks to its membership. However, Cyprus' ambition to become a Mediterranean energy hub depends on the success of its exploration activities. It is not by chance that this was clearly stated by Cypriot president Nikos Anastasiades at the conference marking his third year of presidency in April 2016,¹⁵ linking the construction of an onshore LNG terminal to the success of exploration activities. His statement partly contradicts former declarations, such as the 2014 talks between the Cypriot government and Eni, KOGAS and Total to build a liquefaction facility also for Lebanese and Israeli gas,¹⁶ or the possibility of shipping Cypriot gas via the Egyptian Damietta plant, as expressed by Eni's CEO Claudio Descalzi in September 2015.¹⁷

Nonetheless, a successful development of exploration and then exploitation activities requires, in turn, the resolution of the border issue. Thanks to EEZ agreements with Egypt and Lebanon, the southern side is relatively stable and energy cooperation is proceeding. A 2012 failed trilateral MoU among Israel, Greece and Cyprus on energy matters was however followed by the signature of a cooperation agreement on energy and other topics in January 2016, which could also involve the laying of an Israel-Cyprus gas pipeline. The partnership with Egypt is probably the fastest moving: building on 2006 and 2015 energy agreements to export gas from Cyprus to Egypt, the two countries signed an agreement in August 2016 smoothing the way to build a gas pipeline from the Cypriot fields in the next

Mediterranean", in Silvia Colombo and Nicolo Sartori (eds.), *The OSCE's Contribution to Energy Governance in the Mediterranean Region*, Rome, Istituto Affari Internazionali, April 2016, p. 17, <http://www.iai.it/en/node/6288>.

¹⁴ Mark Smedley, "EXXON/QP among Cyprus Bidders", in *Natural Gas Europe*, 28 July 2016, <http://www.naturalgasworld.com/exxon/qp-among-cyprus-3rd-round-bids-30813>.

¹⁵ "Cyprus: LNG Plant Construction Depends on Future Gas Discoveries", in *Offshore Energy Today*, 19 April 2016, <http://www.offshoreenergytoday.com/?p=200062>.

¹⁶ "Cyprus to Start Negotiations over LNG Terminal", in *LNG World News*, 25 August 2014, <http://www.lngworldnews.com/?p=141543>.

¹⁷ "Cyprus Gas to Reach European Market via Damietta LNG Facility in Egypt", in *LNG World News*, 10 September 2015, <http://www.lngworldnews.com/?p=166760>.

years.¹⁸

Uncertainty resides mostly in the northern part of the country, over the unresolved issue with Turkey and the TRNC. Even if the discoveries to date have been located only in the south of the country's EEZ, Turkish opposition has been strong right from the first round of concessions, when Ankara sent two research vessels into block 9 and block 12 (more than 300 kilometres from the Turkish coast), in response to the first Eni and Noble drilling activities. The second round of concessions received the strongest share of opposition, as Turkey stated that the step taken was "unilateral" and "irresponsible and provocative," and threatened to exclude the companies involved from all the future energy activities after the hypothetical settlement of the Cypriot issue.¹⁹ The situation is complicated by the overlapping of Cyprus concessions with both Turkish and TNRC defined blocks, all assigned to the Turkish national company Turkish Petroleum (TPAO). Although official declarations have not yet been delivered by Turkey, a Turkish frigate recently demanded that a Cypriot research vessel abandon the area it was exploring, 12 miles off the western tip of the island, declaring it was violating Turkish territory.²⁰

While the resolution of the Cyprus controversy has stalled in the past years, exploration activities are proceeding at a fast pace. So far Cyprus has decided to keep the development of offshore gas reserves separate from the reunification dossier, as stated by Cypriot Minister of Energy, Yorgos Lakkotrypis, in May 2016.²¹ The aim is likely to exploit the geographical position of current discoveries – in the south – and the connection with energy-thirsty Egypt, to limit Turkish interference. Yet, as Turkey has proved bold enough to reach block 12 with its research vessels, the resulting political instability could represent a serious threat and discourage private companies operating in the area. Considering the growing gas demand of Turkey, which hit a monthly peak of 5.78 bcm in January 2016,²² and its large dependence on Russian gas, being the second largest buyer after the EU, a peaceful cooperation would be however also in the interests of Turkey. The impasse between the resolution of the Cypriot dispute and the settlement of concessions could be then at the same time entail the possibility of overcoming the deadlock in negotiations, rather than being the trigger for further hostilities.

¹⁸ Menelaos Hadjicostis, "Cyprus, Egypt Sign Deal Paving Way for Gas Pipeline", in *The Big Story*, 31 August 2016, <http://bigstory.ap.org/node/13052330>.

¹⁹ Turkish Ministry of Foreign Affairs, *Press Release Regarding the Second International Tender for Off-Shore Hydrocarbon Exploration Called by the Greek Cypriot Administration (GCA)*, 15 February 2012, http://www.mfa.gov.tr/no_-43_-15-february-2012_-second-international-tender-for-off-shore-hydrocarbon-exploration-called-by-the-greek-cypriot-administration-_gca_.en.mfa.

²⁰ George Psyllides, "Cyprus to Protest Turkish Harassment of Cypriot Vessel", in *Cyprus Mail*, 27 August 2016, <http://cyprus-mail.com/?p=96317>.

²¹ Georgi Gotev, "Cyprus Will Develop Offshore Gas Irrespective of Reunification", in *EurActiv*, 26 May 2016, <http://eurac.tv/1Qa9>.

²² "Turkey Hits Historic Gas Consumption Record in Jan.", in *Anadolu Agency*, 22 March 2016, <http://v.aa.com.tr/541692>.

3. Evolution of gas exploration policies in Israel and limits to regional energy cooperation

Among Levant countries, Israel probably holds the most promising prospects for the development of its gas resource. Thanks to significant reserves (around 200 bcm at the end of 2015, according to the US Energy Information Administration, EIA²³) and to sufficient political stability to attract investments and thus develop the sector, the country has managed to switch from being a net gas importer to approaching the satisfaction of domestic demand and the ability to export to neighbouring countries. Nevertheless, the development of the Israeli gas sector could be significantly undermined by challenges from both the domestic and the external side.

Indeed, the major discovery in Israel's EEZ, the Leviathan field, has entailed a long succession of troubles among the companies holding the concessions, the Israeli government and the country's regulatory environment. The situation is different than with the Mari-B field, the first to produce significant volumes in Israel, and with the Tamar field, which was discovered in 2009, began production in 2013 and replaced the share of the almost depleted Mari-B. While Leviathan is a much greater discovery than the other two fields (623 bcm against the circa 283 bcm of Tamar and 1 of Mari-B), production is expected to start not earlier than 2019. This would be nine years after the discovery, compared to four years for Tamar.

Troubles began in 2010, when the Sheshinski Commission started revising the taxation regime for oil and gas companies, suggesting in 2011 to raise levies on profits from 30 percent to 52-62 percent.²⁴ The committee, whose activities were followed by those of the Zemach Committee, aimed at avoiding the consolidation of a monopoly in the new-born gas industry, but it faced strong opposition from the companies and the lobbies operating in the sector. The recommendations of the Zemach Committee were finally applied by government resolution 442 and then further amended by the work of the Kandel task force, the so-called "natural gas regulatory framework," still the most up-to-date legislation in the Israeli gas sector.

All these changes deeply affected the development of Leviathan: in 2015 protests raged in Israel against the deal (whose terms were not made public) with the Noble-Delek partnership, which was running the Leviathan and the Tamar fields and was accused of building the monopoly. In March 2016 the plans to develop Leviathan were blocked by Israel's Supreme Court and then approved only in May.²⁵ As

²³ EIA, *Country Profile: Israel*, updated July 2016, <https://www.eia.gov/beta/international/analysis.cfm?iso=ISR>.

²⁴ Sharon Wrobel, "Sheshinski Eases Proposed Tax for Gas Exploration Firms", in *The Jerusalem Post*, 1 April 2011, <http://www.jpost.com/National-News/Article.aspx?id=202116>.

²⁵ "Israel's Government Approves Leviathan Natural Gas Deal", in *Reuters Africa*, 22 May 2016, <http://af.reuters.com/article/energyOilNews/idAFL5N18J096>.

development of the field was not able to start until June, Israeli energy minister Yuval Steinitz stated that the delays could have cost the country as much as 26 billion dollars.²⁶

Boosting competition was not, however, the only issue under discussion. Indeed, the debate also regarded the quantity and the timeline of gas to be exported, fearing that in the scenario of no further discoveries, exports would threaten Israeli gas security. In addition, due to difficulties in promoting regional cooperation, Israel might well face issues in exporting.

In the north, Lebanon represents a significant obstacle: as the country does not recognize the existence of Israel, and keeps thus no diplomatic relations, energy trade or common development of resources is not possible. In addition, the circa 854 square miles of overlapping claims along the border and near Israel gas fields could also threaten the awarding of concessions and so further explorations. Turkey, instead, could be a valuable destination for Israeli gas because of its proximity to the Leviathan field and its growing energy demand. The country is already on Israel's radar, and the June 2016 restoration of diplomatic ties was undertaken with a keen eye on energy.²⁷ Nonetheless a pipeline, which has already been considered economically feasible,²⁸ would have to pass through the Cyprus EEZ. It is thus unclear how this "energy triangle" between Israel, Turkey and Cyprus would work until the Cypriot issue is resolved.

A more likely receiver for Israeli gas is Egypt. Indeed, the country agreed on importing gas for the first time in 2015, after being an exporter for years. The two are already connected via the AGP, specifically its EMG branch, and larger volumes would only require an upgrade – a significantly cheaper solution than new interconnections, which are needed in the case of Turkey. Yet, the 1.2 billion dollar deal for Israeli gas was slowed by a controversy over Egypt's 1.76 billion dollar debt owed to the state-owned Israel Electric Corp. Although the dispute was almost settled in May 2016, the future delivery of Israeli gas to Egypt is not yet resolved, especially if the possibility of additional Egyptian discoveries after Zohr is taken into consideration. Meanwhile, a ten billion dollar deal for 8.5 million cubic meters a day, agreed at the end of September 2016, has now stalled because of widespread public protest against further trade with Israel.²⁹

²⁶ Ya'acov Zalel, "Leviathan Delay Cost Israel \$26bn: Minister", in *Natural Gas Europe*, 13 July 2016, <http://www.naturalgasworld.com/steinitz-israel-lost-up-to-nis-100-bn-because-of-leviathan-delay-30584>.

²⁷ Ercan Gurses and Jeffrey Heller, "Israel, Turkey Restore Ties in Deal Spurred by Energy Prospects", in *Reuters*, 27 June 2016, <http://reut.rs/28XGNKf>.

²⁸ Laura El-Katiri, "Political Dialogue to Facilitate the Development of Energy Resources in the East Mediterranean", cit., p. 28.

²⁹ "Amman Protest: Jordan-Israel Natural Gas Deal in Focus", in *Al Jazeera*, 1 October 2016, <http://www.aljazeera.com/news/2016/09/amman-protests-jordan-israel-natural-gas-deal-focus-160930170916074.html>.

Hampered by internal and external blockage against the sale of its gas, Israel however needs solid export routes to raise the foreign investments required to fully develop the sector, winning over the doubts expressed by foreign investors on several occasions.³⁰

4. Export options: Which way for East Med gas?

As highlighted in the previous sections, the amount of hydrocarbon resources located in the East Med is significant and can not only contribute to satisfying regional demand, but also can be exported towards the international market, in particular to European consumers eager to diversify their supplies and add liquidity to their import mixes. Specifically, the exportability of a part of these resources to profitable markets is a strong push for their effective development by companies involved in exploration activities.

At present, the same political, technical and commercial factors that hinder the full exploitation of the gas volumes located in the Levant basin contribute also to limiting the viable options to export East Mediterranean gas to regional and international markets. In this context, we can identify four main export outlets for these resources, each presenting 'pros and cons' for the actors involved in the regional energy game.

The first option is to expand **intraregional trade**, strengthening the Israel-Egypt-Jordan-Lebanon ties and possibly extending interconnection to Palestine. The positive aspect is that a large part of the needed transport infrastructure – the AGP – is already in existence and functioning. However, the feasibility of this solution will depend to a large extent on a set of political factors: the state of diplomatic relations between Israel and its Arab neighbours; the stability in the Sinai Peninsula, currently threatening the security of gas transit through the area; the conflict situation in Syria, which limits the regional gas demand while endangering the potential flows to Lebanon. In this context, the commercial arguments in favour of trading gas regionally are under question for both producers and their Arab customers.

The second alternative is to develop the **Turkish route** with a subsea pipeline for Cyprus and Israeli gas, possibly extending the link to the Southern Gas Corridor and the EU markets. Turkey represents a geographically close and economically logical export market for Cypriot and Israeli gas. However, part of the transit area remains very much battled over by Syrians, Lebanese, Israelis and Palestinians, while the situation in Cyprus still prevents the materialization of this option. In addition, the competitiveness of the East Med gas vis-à-vis Russian supplies (in particular if heavily discounted) could in the end be questionable. In any case, some

³⁰ Stanley Reed, "Israel Courts Foreign Money in Effort to Become Gas Exporter", in *The New York Times*, 1 September 2016, <http://nyti.ms/2bFPkWB>.

positive developments such as the improving diplomatic relations between Turkey and Israel and the possible settlement of the Cyprus issue may rapidly change both the energy landscape and export priorities.

The third option is the establishment of a direct link between regional gas resources and the European market through the **East Med gas pipeline**. This solution is sponsored by the European Commission, which is co-funding a feasibility study to assess the technical and commercial viability of the infrastructure. Also Greece, Cyprus and Israel express support for the pipeline, which would offer the producers direct access to a secure and lucrative market avoiding the risks of volatility and competition in the LNG sector, while contributing to strengthening cooperation in the EU's south-eastern neighbourhood. Despite this strong political rationale, the feasibility of the pipeline is currently put under question by commercial factors, and in particular by the limited amount of Israeli and Cypriot gas to be actually transported, as well as its price competitiveness vis-à-vis incumbent suppliers, in particular Russia.

The fourth possibility is the **Egyptian LNG hub**. While the realization of LNG terminals in Cyprus/Israel has been already excluded due to lack of economic fundamentals, the use of existing infrastructure off the Egyptian coast, Idku and Damietta, represents a commercially doable solution. The two terminals are in fact ready to liquefy and export gas, and are expected to start if part of the new Egyptian production, from Zohr *in primis*, is surplus to domestic demand. In this context, considering that it will be difficult for Egypt alone to use the 19 bcm/year export capacity of the two terminals, these may be connected with Cyprus and Israeli fields, creating a regional LNG hub. The bilateral energy agreement between Cairo and Nicosia signed on 31 August 2016 (which adds to past negotiations between Egypt and Israel to connect Tamar with Damietta and Leviathan with Idku) would push for an export solution, at least in the short term. From an economic perspective, the limited investment necessary to complete the export infrastructure already in place is certainly a big advantage, but one that is balanced by political factors, in particular Israel's concerns about its eventual export dependence on Egypt, which would indisputably become the centre of gravity for the East Med gas hub.

Conclusion: Options for energy cooperation in the Eastern Mediterranean

This analysis shows that all of the above options have their strengths and weaknesses, and that a univocal and definitive decision is far from being taken.

On the one hand, it seems clear that some of the commercial and technical constraints presented may be difficult to overcome without radical changes in the regional energy equation (i.e., large new discoveries). On the other, it is possible that the introduction of better governance mechanisms and the strengthening of mutual trust may help the stakeholders involved in the East Med game to go beyond

at least part of their political concerns and find common ground to establish effective regional energy cooperation.

It is however not yet clear how energy cooperation could relate to political stability. It could be that energy would be considered a completely separate chapter from geopolitical relations among countries. The 2014 Ankara Protocol between Cyprus and Turkey, for instance, established distinct negotiations for each topic. In this sense, fruitful energy cooperation could pave the way to solving inconclusive political relations.

Yet, the same Ankara Protocol has been largely ignored by Turkish authorities, also because of growing interest in new gas discoveries. As uncertainty lies around the true amount of gas reserves in the Eastern Mediterranean, many countries could take a wait-and-see approach to assess what is really at stake.

Finally, while regional cooperation is needed to cope with the limited financial and technological resources available, a comprehensive Eastern Mediterranean platform is unlikely to work because of the highly variable relations among countries and the many and still unresolved tensions, as well as the heterogeneous needs of the actors. A system of trilateral agreements, though (Cyprus-Greece-Israel or Cyprus-Egypt-Israel, for instance), could have more chance of success, especially considering the role of Cyprus as a political bridge towards the EU. A significant increase in discoveries and thus in available resources could divert attention of the EU-promoted Southern Corridor, today focused on the Azeri gas but in the future potentially supplied by East Med volumes. Another realistic option is that some Iranian gas could be made effectively available to Europe (an option openly supported by Iran but whose economic viability is uncertain). Direct access to the EU market could boost individual interest in cooperating, and eventually solve the deadlock currently holding hostage the gas reserves in Cyprus, Lebanon, Israel and Egypt.

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