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# PIPELINES AND PIPEDREAMS

## HOW THE EU CAN SUPPORT A REGIONAL GAS HUB IN THE EASTERN MEDITERRANEAN

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### SUMMARY

- Large natural gas discoveries in the eastern Mediterranean have raised hopes that the region could serve EU energy needs, helping it to fulfil its goals of energy diversification, security, and resilience.
- But there are commercial and political hurdles in the way. Cyprus's reserves are too small to be commercially viable and Israel needs a critical mass of buyers to begin full-scale production. Regional cooperation – either bilaterally or with Egypt – is the only way the two countries will be able to export.
- Egypt is the only country in the region that could export gas to Europe independently because of the size of its reserves and its existing export infrastructure. But energy sector reforms will be needed to secure investor confidence in this option.
- There are now two options for regional export: to build a pipeline that connects Israel and Cyprus to southern Europe, or to create a network of pipelines into Egypt, from which gas could be liquefied and exported.
- The EU should explore regional prospects by strengthening its energy diplomacy, developing more projects of common interest, working to resolve the Turkey-Cyprus dispute, and incentivising reforms in Egypt.

There has been a great deal of excitement over the past few years around newly-discovered gas reserves in the eastern Mediterranean, and rightly so. With confirmed reserves reaching close to 100 billion cubic metres (bcm) of gas, and the possibility of more discoveries to come, the Levantine Deep Marine Basin has the potential to offer two things of value to the European Union: energy security, and an improvement in regional cooperation between Middle Eastern countries.

The diversification of Europe's gas supply has long been a priority for the European Union. With gas wars taking place between Russia and EU member states in 2006 and 2009, and a major escalation of diplomatic tension following Russia's annexation of Crimea in 2014, efforts to address this issue have accelerated in recent years.<sup>1</sup> The prospect of reducing the EU's dependency on Russian gas by securing supplies from within Europe's geographical vicinity could help the EU build energy resilience – a stated goal of its Energy Union strategy.

Gas discoveries in the eastern Mediterranean have also led to hopes that mutual economic benefits could be a catalyst for closer relations between various states in the Levant. Whether this means facilitating Israeli economic integration with Arab neighbours, or catalysing rapprochement between Cyprus and Turkey, these discoveries initially seemed like promising means of greater stability and reduced volatility in the region.<sup>2</sup> The notion of 'economic peace', loosely defined as using economic development to break political impasses

<sup>1</sup> James Kanter, "Europe Seeks Alternative to Russian Gas," the *New York Times*, 16 February 2016, available at [https://www.nytimes.com/2016/02/17/business/energy-environment/european-union-seeks-to-reduce-reliance-on-russian-gas.html?\\_r=0](https://www.nytimes.com/2016/02/17/business/energy-environment/european-union-seeks-to-reduce-reliance-on-russian-gas.html?_r=0).

<sup>2</sup> Peter Baker, "For Israel, Energy Boom Could Make Friends Out of Enemies," the *New York Times*, 14 January 2017, available at [https://www.nytimes.com/2017/01/14/world/middleeast/israel-energy-boom.html?\\_r=0](https://www.nytimes.com/2017/01/14/world/middleeast/israel-energy-boom.html?_r=0).

and move parties towards peace, has informed much of the diplomatic agenda of the US State Department in the eastern Mediterranean. Indeed, under the administration of President Barack Obama, a special position was created for that purpose. The Special Envoy and Coordinator for International Energy Affairs was created to spearhead energy diplomacy globally, with a particular focus on the eastern Mediterranean.

The prospects of energy security and regional cooperation merit further exploration, as initial optimism regarding these discoveries has been tempered by the political, economic, and logistical realities on the ground. Many experts believe that the initial hype around natural gas discoveries in the region has been overstated. In a relatively short period of time, excitement has been replaced with scepticism and the sense that reserves are likely to remain stranded unless major developments – such as additional discoveries or diplomatic breakthroughs – take place. However, opinion is split: there are others who continue to stress that countries in the region have enormous potential to become leading players in global energy. At the very least, most experts and officials interviewed for this study agree that gas reserves can be used within the region, even if plans to export fail.

This report assesses how important these gas reserves are for European energy security and offers a detailed examination of the export prospects of key discoveries. The report then suggests ways to maximise the likelihood of these resources entering the European market, and puts forward recommendations for EU policymakers to support the export potential of these resources and to promote greater regional cooperation for the eastern Mediterranean.

## Gas in Europe

How important are the eastern Mediterranean gas discoveries for European energy security? Currently, more than half of all the energy consumed within the EU is imported from abroad, making it heavily reliant on external supply. In the case of natural gas, the proportion of energy imported is closer to two-thirds.<sup>3</sup> In the two decades between 1995 and 2015, European dependency on natural gas imports rose from 43 percent to 67 percent.<sup>4</sup> Alongside other factors, this was driven by diminished European production, which fell by a Compound Annual Growth Rate (CAGR) of 5.6 percent in the decade between 2005 and 2015.

Germany, Italy, France, Belgium, and Spain are the biggest importers of natural gas, the majority of which comes from Russia, Norway, Algeria, and Qatar.<sup>5</sup> But Norway's production is gradually declining and future prospects for Algerian gas remain unclear, because key contracts will end in 2019

and 2020.<sup>6</sup> Qatar will likely remain an important supplier of Liquefied Natural Gas (LNG) to the EU, particularly to western European states that have the requisite capacity for regasification – the process of converting LNG to gas – in their LNG terminals. But it is Russia that supplies the lion's share of gas, accounting for around one-third of European gas imports. Member states vary in their dependency on Russia according to internal factors such as domestic production and fuel mix, and external factors such as geographic proximity, geopolitical relationships, and the availability of alternative supply options. According to the latest figures, countries in eastern Europe such as Estonia, Finland, Latvia, and Lithuania are particularly exposed, as they import all of their natural gas from Russia.<sup>7</sup>

A longtime goal of the EU has been to increase energy security, here loosely defined as the ability to reliably secure access to uninterrupted supplies to meet local demand. Crucial to achieving energy security is ensuring the uninterrupted flow of gas, Russian or otherwise, to Europe. The majority of imported Russian gas currently transits through networks in Ukraine, although pipelines such as Nord Stream and Yamal provide additional security by offering alternative transit routes.

European gas disputes with Russia climaxed in 2014 when Gazprom – Russia's state-owned gas supplier – cut off exports to Ukraine. This led to severe energy crises in several eastern European states, some of which depend wholly on Russian supplies. That same year, the EU put forward the European Energy Security Strategy, which outlined the need to enhance EU resilience to such crises. Alongside diversifying supply routes, the EU seeks to: diversify sources of supply; ensure access to flexible fuel alternatives, such as LNG; and reform internal European markets to allow for greater mutual support – for instance, by enabling pipelines to carry gas in both directions.<sup>8</sup> Europe's roadmap for achieving energy security also includes boosting domestic production and increasing the use of sustainable energy.

Russian gas is somewhat of a poisoned chalice for the EU: it is cheaper than almost any other supply Europe could purchase, be they pipeline or LNG imports, yet depending on Russia weakens the EU's own energy security. One energy expert noted that there is little getting away from this, and that Europe will continue to rely on Russia as its principal supplier of imported gas even if Europe successfully pursues alternative suppliers.<sup>9</sup> This will be the case particularly if Gazprom reduces its prices further to safeguard its European market share.<sup>10</sup> There is geostrategic value in diversification, but the EU – as a political and bureaucratic body – can only intervene on the policy level and ensure regulatory frameworks allow for the emergence

<sup>3</sup> "European Energy Security Strategy," European Commission, available at <https://ec.europa.eu/energy/en/topics/energy-strategy/energy-security-strategy>. (hereafter, "European Energy Security Strategy").

<sup>4</sup> "EU in Figures, 2016: Statistical Pocketbook," Office of the European Union, 2016, available at <https://ec.europa.eu/transport/facts-fundings/statistics/pocketbook-2016-en>. (hereafter, "EU in Figures, 2016").

<sup>5</sup> "EU in Figures 2016", p. 56.

<sup>6</sup> Lamine Chikhi, "Algeria's gas exports to EU set to rise 15 percent in 2016: official", *Reuters*, 4 May 2016, available at <http://www.reuters.com/article/us-algeria-energy-idUSKCN0XVoUG>.

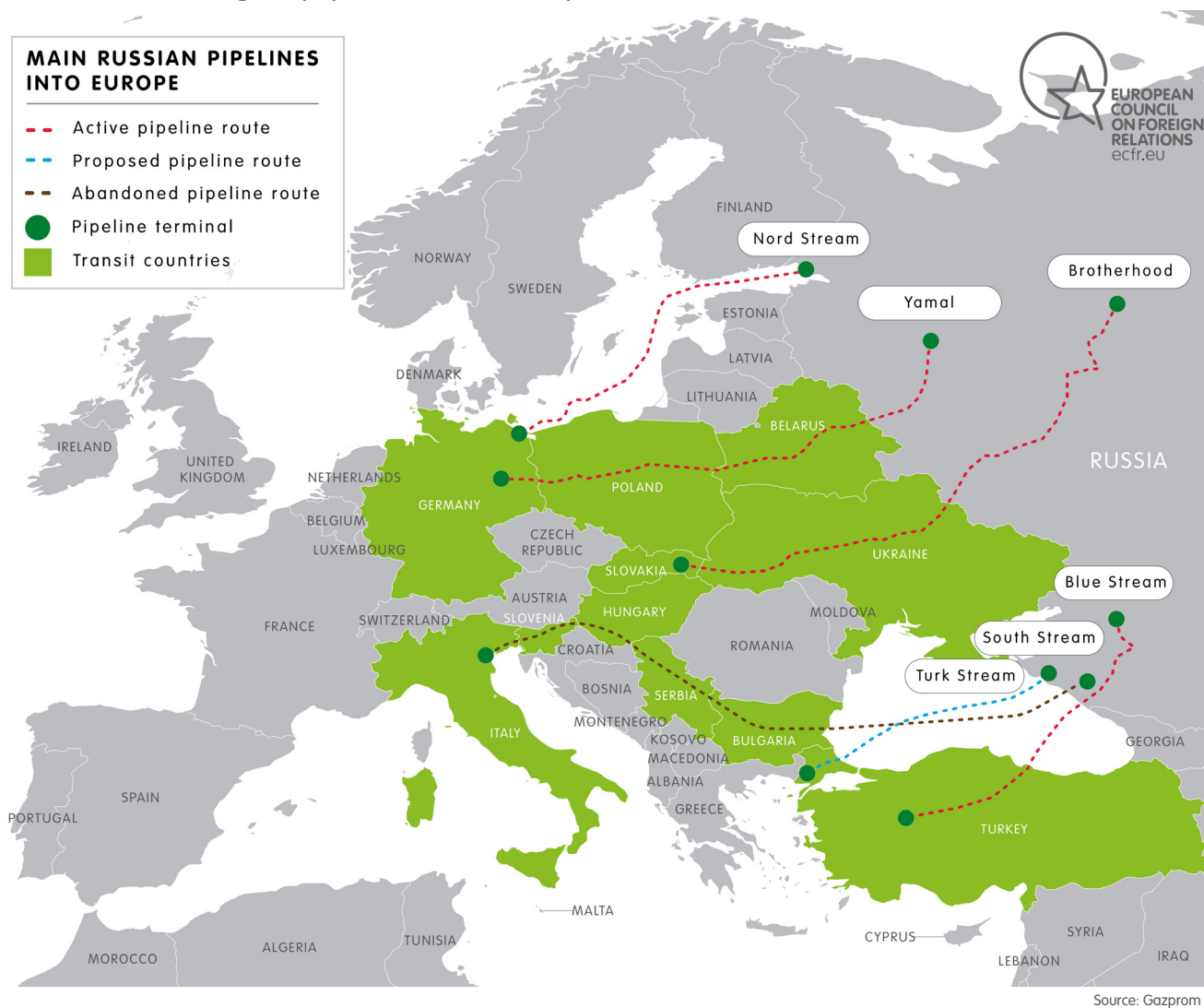
<sup>7</sup> "Assessment report of directive 2004/67/EC on security of gas supply", European Commission, 16 July 2009, available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SEC:2009:0978:FIN:EN:PDF>.

<sup>8</sup> "European Energy Security Strategy", pp. 9-10.

<sup>9</sup> Interview with energy security expert, January 2017.

<sup>10</sup> Interview with eastern Mediterranean energy expert, February 2017.

## Main Russian gas pipelines to Europe



of a competitive market environment.<sup>11</sup> Whether such markets then meet the EU's diversification policies depends almost entirely on commercial factors.<sup>12</sup>

The EU may have its hands tied by market dynamics, but it has continued to push forward the political track on diversification. Some of its initiatives and adjustments have been inward-looking – such as endorsing a shift towards renewables, or making efforts to explore alternative means of European production. The EU28 have been working towards the target of ensuring that renewable energy accounts for 20 percent of the total energy mix by 2020.<sup>13</sup> This goal has often manifested itself in specific policies that support a market reorientation towards renewables: for example, through direct subsidies for renewables, or through plans to actively de-carbonise electricity supply. These efforts were given a further boost by the COP21 climate deal, which represented a major breakthrough in the international community's commitment to reduce greenhouse gas emissions. Such market reconfiguration can go some way towards explaining the slow but steady decline of European gas

consumption. For example, in the decade 2005 to 2015, gas consumption dropped by a CAGR of 2.14 percent.

But this decline in gas consumption should not underplay the continuing importance of it in Europe's medium-term energy mix. As a cleaner fuel than both coal and oil, gas is likely to play a prominent role in Europe's goal to reduce emissions when used as a substitute for more pollutive hydrocarbon sources.<sup>14</sup> Consumption has also increased by about 7 percent since 2015 despite the general trend of decline.<sup>15</sup> In 2016, gas rose to account for 45 percent of the UK's energy mix following the closure of several coal-based power plants.<sup>16</sup> The EU's commitment to the COP21 agreement might, in fact, sustain gas demand as energy markets adapt to a world that is moving towards cleaner energy. During this period of transition,

14 "New Global Gas Market", in 2016 Columbia Global Energy Summit Conference Report, Columbia Center on Global Energy Policy, available at [http://energypolicy.columbia.edu/sites/default/files/energy/2016\\_CGE\\_Summit.pdf](http://energypolicy.columbia.edu/sites/default/files/energy/2016_CGE_Summit.pdf), p. 6. (Hereafter, "New Global Gas Market").

15 Charles Ellinas, "Hydrocarbon Developments in the eastern Mediterranean: The Case for Pragmatism", the Atlantic Council, 1 August 2016, available at <http://www.atlanticcouncil.org/publications/reports/hydrocarbon-developments-in-the-eastern-mediterranean>, p. 25. (Hereafter, "Hydrocarbon Developments").

16 "Quarterly Report on European Gas Markets," Market Observatory for Energy, DG Energy 9, 2016, available at [https://ec.europa.eu/energy/sites/ener/files/documents/quarterly\\_report\\_on\\_european\\_gas\\_markets\\_q2-q3\\_2016.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/quarterly_report_on_european_gas_markets_q2-q3_2016.pdf).

11 Interview with European energy diplomat, January 2017.

12 Interview with European energy diplomat, January 2017.

13 "EU in Figures 2016", p. 27.

the expectation is that demand is likely to either stagnate or slowly decline.<sup>17</sup> In the longer-term, gas demand is likely to be lower, although that ultimately depends on the ability of member states to shift towards cleaner and more efficient energy.<sup>18</sup> Alongside a move towards renewable energy, the EU might be able to pursue avenues for unconventional shale gas production, particularly in eastern Europe, although this plan is facing strong political opposition from anti-fracking groups.

The EU's energy mix, alongside its desire for diversification and security, influence the manner in which it perceives eastern Mediterranean gas. While the EU is pursuing a strategy of supply diversification, it is also investing in its domestic resilience, as well as putting in place a longer-term strategy for reduced dependence on gas. Supply from the eastern Mediterranean could help fulfil these goals – after all, the EU is likely to remain a strong consumer of gas in the medium-term, even if overall consumption is slowly falling. But Europe also has alternative options for non-Russian gas. There are other reserves in Mozambique and Tanzania that remain undeveloped; cheap LNG from the United States; and, as recently as January 2017, announcements were made regarding gas reserves off Africa's western coast, in Senegal and Mauritania. Which option Europe chooses will largely depend on cost factors, assuming extraction and exporting is feasible in the first place.

One of the most important trends that could impact the EU's decision-making process is the arrival of American LNG onto the world stage following the so-called 'shale gas revolution'.<sup>19</sup> As a result of this, global LNG markets are now in flux because the sheer volume of American exports has created a short-term supply glut. This is likely to continue for some time, with 130 billion cubic metres (bcm) of export capacity coming from the US and also Australia in the near future.<sup>20</sup>

This gas glut could have several longer-term implications, including shifting the pricing models for LNG in the different markets (Asian, European, and American); reducing the appetite for longer-term contractual gas supply arrangements; undermining prospects for capital-intensive LNG projects elsewhere in the world; and reducing the commercial feasibility of developing new gas reserves.<sup>21</sup> Given that this glut is expected to continue for four-to-five years, it will impact developments in the eastern Mediterranean, where projected exports would have to compete with American LNG. It is unclear whether the EU can absorb all American LNG exports in the next five years, even if European regasification capacity reaches its projected estimate of 275bcm per year by 2022. After this period, gas prices could increase again, making projects in the eastern Mediterranean, and elsewhere, viable.<sup>22</sup>

<sup>17</sup> Interview with European energy diplomat, January 2017.

<sup>18</sup> Interview with eastern Mediterranean energy expert, January 2017.

<sup>19</sup> "New Global Gas Market", p. 5.

<sup>20</sup> "New Global Gas Market", p. 5, and "World Energy Outlook 2016", International Energy Agency, 16 November 2016, available at <http://www.iea.org/newsroom/news/2016/november/world-energy-outlook-2016.html>, p. 7.

<sup>21</sup> "New Global Gas Market", p. 5.

<sup>22</sup> Interview with energy expert, February 2017.

Regardless of these dynamics, the EU has been encouraged by the gas reserves on its doorstep. On the face of it, these discoveries have the potential to be a cheap source of secure gas that could underpin Europe's projected medium-term consumption, all the while reducing its dependency on Russia. They also have the potential to address other areas of political importance for Europe, such as internal cohesion and energy integration, particularly in southern and eastern Europe.<sup>23</sup>

There have already been signs that the EU is taking these possibilities seriously. The most explicit was the EU's decision to designate the EastMed pipeline – a pipeline linking reserves in the region to Greece – as a project of common interest (PCI) between the EU and the region, which means that the project can receive a host of benefits, including "accelerated planning and permit granting", "lower administrative costs", and "increased visibility to investors".<sup>24</sup>

For a project to be designated a PCI, it must meet a number of criteria. It must: impact the energy markets in at least two EU countries; enhance competition within the EU market; contribute to internal energy integration; diversify sources; and contribute towards Europe's renewable goals. As the EU considers ways of strengthening its energy security within an ever-evolving global energy market, the eastern Mediterranean has the potential to become a key player in this transition. However, its role is far from guaranteed, and many hurdles remain.

## Gas in the Levant

Exploration of gas reserves in the Levantine Basin is still underway, but it has ramped up following major discoveries in the waters of Cyprus, Egypt, and Israel over the past five years. Lebanon is on the cusp of commencing exploration. This section outlines the opportunities and barriers to extraction for countries in the region. These detailed case studies will allow policymakers to understand the chances of the EU in receiving imports, and demonstrate the political and economic barriers that need to be overcome to begin exploiting resources in the region.

### Cyprus

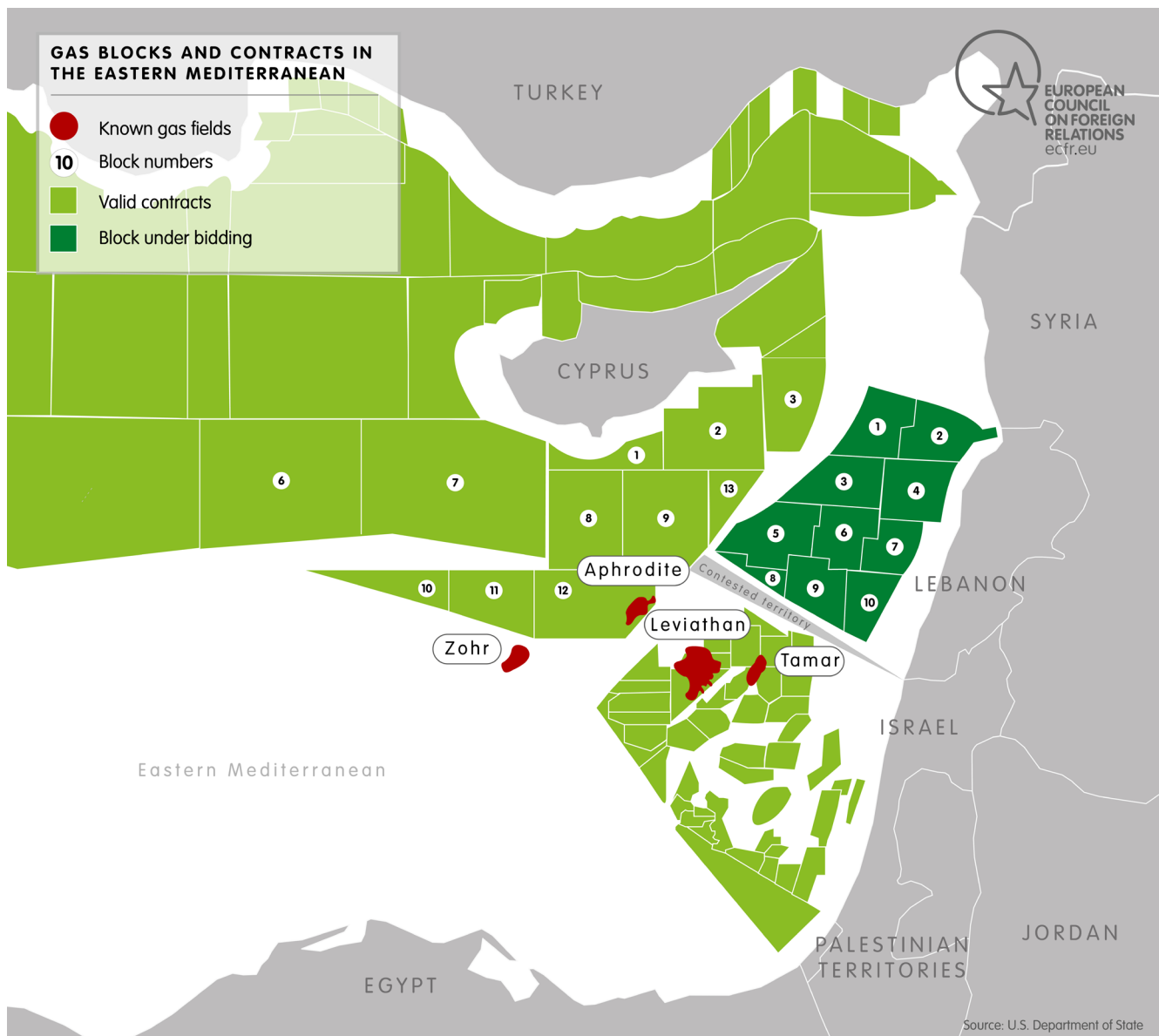
In 2011, Houston-based firm Noble Energy discovered the Aphrodite gas field in Block 12 of Cyprus' Exclusive Economic Zone (EEZ). Aphrodite is a small to medium field that, based on initial estimates, holds between 3.6 and 6 trillion cubic feet (tcf) of gas: an amount that could overcome Cyprus' dependence on oil.<sup>25</sup> The discovery of Aphrodite led to hopes that Cyprus might begin producing gas both for its domestic market as well as for other European markets, given that the relatively low level of gas consumption in Cyprus would leave large reserves for export.

<sup>23</sup> "Energy Community", European Commission, available at <https://ec.europa.eu/energy/en/topics/international-cooperation/energy-community>.

<sup>24</sup> "Projects of common interest", European Commission, available at <https://ec.europa.eu/energy/en/topics/infrastructure/projects-common-interest>.

<sup>25</sup> "Cyprus approved BG Group as partner in offshore Aphrodite gas field", *offshoretechnology*, 19 January 2016, available at <http://www.offshore-technology.com/news/newscyprus-approves-bg-group-partner-offshore-aphrodite-gas-field-4787325>. (Hereafter, "Cyprus approved BG Group").

## Gas blocks and contracts in the eastern Mediterranean



However, there is consensus that Aphrodite is too small to justify the capital investment needed for its development. For export to begin, Cyprus would either have to transfer its gas through an onshore or offshore LNG terminal, or through pipeline. With no infrastructure currently in place, this would require significant capital investment. Given that Cyprus is a new entrant into the world of gas, any prospective LNG terminal would be a greenfield infrastructure project, and the return on invested capital from projected gas flows would be insufficient to make the project worthwhile.<sup>26</sup> There are similar financial restrictions when it comes to plans for a pipeline to southern Europe, along with additional political challenges regarding the feasibility of construction, due to difficult terrain near Crete. Furthermore, any such pipeline from Cyprus to Europe would have to receive Turkey's blessing, given that it disputes portions of Cypriot maritime territory.

Prospects for export from Aphrodite are therefore slim. For the time being, Cyprus has redoubled efforts to pursue further exploration of other offshore blocks in its EEZ. In December 2016, Cyprus successfully completed an international bidding process and awarded the rights to explore Blocks 6, 8, and 10, to four international firms – Eni and Total; Eni; and ExxonMobil and Qatar Petroleum International, respectively.<sup>27</sup> Total has also expanded its exploration activities in Block 11, where it hopes to discover a field that rivals the huge Zohr field in Egypt. If such a field is discovered, it could drastically change return on investment calculations, and therefore resuscitate options for a LNG terminal.<sup>28</sup> In the event of more natural gas discoveries, Cyprus might also be able to consider other

<sup>27</sup> "Three blocks awarded offshore Cyprus", Oil & Gas Journal, 23 December 2016, available at <http://www.ogj.com/articles/2016/12/three-blocks-awarded-offshore-cyprus.html>.

<sup>28</sup> Interview with eastern Mediterranean energy expert, January 2017. See also: "Total's Cyprus Block 11 could rival Egypt's Zohr discovery, HIS Market says", World Oil, 12 January 2017, available at <http://www.worldoil.com/news/2017/1/12/total-s-cyprus-block-11-could-rival-egypt-s-zohr-discovery-ih-market-says>.

<sup>26</sup> Interview with expert in global gas and LNG markets, February 2017.

onshore pipeline options that could link into the Trans Adriatic Pipeline, or to the Balkans.<sup>29</sup>

Given the size of current reserves in this region, Cyprus might discover additional resources that could empower it to act as a sole exporter. Until that time, the country has to consider regional options for co-exporting jointly with other countries in the region, or face the possibility that resources in the Aphrodite field could remain stranded.<sup>30</sup>

## Israel

Until recently, Israel was a net gas importer. The country only had a small level of domestic production from an offshore field called Mari B. The rest of its gas was imported from Egypt through a gas pipeline that crossed the Sinai Peninsula into southern Israel. In January 2009, Noble Energy discovered Tamar, a 10tcf gas field located 80 kilometres west of Haifa, in the country's EEZ. This was a timely discovery. As unrest spread through Egypt in 2012, the pipeline delivering Egyptian gas to Israel came under attack by Sinai-based militants, making Egyptian gas increasingly unreliable. Both Israel and Jordan, the other recipient of Egyptian gas, clamoured for alternative supply sources. In 2013, production from Tamar commenced and replaced Egyptian gas, meeting Israel's domestic needs and improving its energy independence.

A year after Tamar was discovered, Noble Energy found the much larger Leviathan gas field, around 50 kilometres south-west of the Tamar field. This reserve, which is estimated to hold approximately 17.6tcf, was the largest discovery in the eastern Mediterranean at that time because the Zohr field off Egypt had not been discovered.<sup>31</sup> Leviathan was touted as a "game-changer", with the ability to transform Israel from a net gas importer to a net exporter, changing its relations with regional actors, and strengthening relations with Europe too.<sup>32</sup> Some experts have claimed that Israel considers potential gas exports to the EU as a matter of strategic importance in light of broader debates within Europe over economic measures to compel Israel to end its 50 year occupation of Palestinian territories.<sup>33</sup> According to this view, Israel sees the possibility of European reliance on its exports as a development that could mitigate the threat of closer scrutiny in future trade agreements. The possible mechanisms by which European states might act have now been formally underscored in UN resolution 2334, passed in December 2016, and would arguably have to inform any European decision to enter into long term gas sales agreements with Israel.<sup>34</sup>

<sup>29</sup> Interview with energy expert, February 2017.

<sup>30</sup> Interview with eastern Mediterranean energy expert, January 2017.

<sup>31</sup> "Israel: Differing opinions on the Leviathan field size", *Offshore Energy Today*, 6 June 2016, available at <http://www.offshoreenergytoday.com/israel-differing-opinions-on-the-leviathan-field-size/>.

<sup>32</sup> Charles Kennedy, "Game-Changer Leviathan Gas Field Sees Serious Delays", *Oil Price*, 25 February 2016, available at <http://oilprice.com/Energy/Natural-Gas/Game-Changer-Leviathan-Gas-Field-Sees-Serious-Delays.html>.

<sup>33</sup> Interview with energy expert, February 2017.

<sup>34</sup> Although these are Israeli gas fields, it is unclear whether distribution networks that facilitate gas supply to both Israel and the occupied territories could expose this sector to punitive action. For more on differentiation as it relates to Israel and the occupied territories see: Hugh Lovatt and Mattia Toaldo, "EU differentiation and Israeli settlements", the European Council on Foreign Relations, 22 July 2015, available at [http://www.ecfr.eu/publications/summary/eu\\_differentiation\\_and\\_israeli\\_settlements3076](http://www.ecfr.eu/publications/summary/eu_differentiation_and_israeli_settlements3076).

Like Cyprus, Israel is a newcomer to the world of gas exporting, and, like Cyprus, it faces domestic obstacles. Early on, Israel's Supreme Court challenged a controversial deal between the government and operators of the Leviathan field to accelerate extraction, citing that it wasn't in a position to make the long-term commitments that Noble Energy sought.<sup>35</sup> In 2016, an agreement was struck and the path was cleared for field operators to move towards production.<sup>36</sup> Israel's Minister of Energy, Yuval Steinitz, travelled throughout Europe to promote Leviathan gas to European buyers, and created a great deal of hype regarding the prospect of Israeli gas reaching the EU.<sup>37</sup>

Despite the confidence of Israel's Minister of Energy and the wider government that Leviathan could export to the EU, Israel faces two big hurdles: securing long-term buyers in order to facilitate production, and identifying feasible export routes. Leviathan's operators must have a minimum value of committed purchases to justify the investment necessary for extraction to proceed. In September 2016, Jordan became the first official buyer, signing a 15-year \$10 billion agreement that commits Israel to deliver a total of 1.6tcf of gas to Jordan beginning in 2019.<sup>38</sup> Discussions are reportedly underway for the delivery of Israeli gas to the Palestinian territories as well.<sup>39</sup> In February 2017, Leviathan's developers announced that they had reached a Final Investment Decision (FID) to make a capital investment and to develop the first phase of the field, which would allow for extraction of 12bcm per year.<sup>40</sup> Production is set to begin at the end of 2019.<sup>41</sup>

These positive developments indicate that Israel will be able to produce and deliver gas locally and to neighbouring regions. But neither Jordan nor the Palestinian buyers are large enough on their own to cover the cost of full-scale production from Leviathan, or to justify major investment in export infrastructure. Instead, Israel must secure commitment from larger markets, such as Turkey or the EU. Following the Turkish-Russian dispute over the downing of a Russian plane over the Syrian/Turkish border, many hoped that Israel could fill the gas export gap left by severed relations between the two. But the recent normalisation of relations between Russia and Turkey has raised doubts regarding Israeli hopes, especially since a major Turkstream pipeline, running across the Black Sea to Anapa and beyond, was finally approved in October 2016. This plan has solidified Russia's role as a key supplier of gas to Turkey, and at a cheaper rate than any future exports from Leviathan.

<sup>35</sup> "Israeli Court Blocks Energy Plan, Could Delay Gas Fields Development", *Fortune International*, 27 March 2016, available at <http://fortune.com/2016/03/27/israeli-court-blocks-energy-plan/>.

<sup>36</sup> "Israel's Government Approved Leviathan Natural Gas Deal", *Fortune International*, 22 May 2016, available at <http://fortune.com/2016/05/22/israel-leviathan-natural-gas/>.

<sup>37</sup> Ron Bousso, "Israel seeks new gas routes to Europe after fixing red tape", *Reuters*, 1 September 2016, available at <http://www.reuters.com/article/israel-gas-idUSL8N1BD3XT>.

<sup>38</sup> Donna Abu-Nasr, "Unwanted: The \$10 Billion Gas Deal With Israel That Jordan Needs", *Bloomberg*, 27 October 2016, available at <https://www.bloomberg.com/news/articles/2016-10-26/unwanted-the-10-billion-gas-deal-with-israel-that-jordan-needs>.

<sup>39</sup> Tareq Baconi, "Gas Politics in Gaza", *Foreign Affairs*, 15 October 2015, available at <https://www.foreignaffairs.com/articles/israel/2015-10-15/gas-politics-gaza>.

<sup>40</sup> "Delek Group: Leviathan partners reach FID", *LNG World News*, 23 February 2017, available at <http://www.lngworldnews.com/delek-group-leviathan-partners-reach-fid/>.

<sup>41</sup> "Work starts on Leviathan field's first phase", *Oil & Gas Journal*, 2 March 2017, available at <http://www.ogj.com/articles/2017/03/work-starts-on-leviathan-field-s-first-phase.html>.

Despite Turkey's renewed engagement with Russia, Israel has engaged in a concerted diplomatic effort to secure a purchase agreement from Turkey.<sup>42</sup> The Turkish market is relatively large, and estimates indicate that Turkey will still be looking to import around 15bcm per year by 2025.<sup>43</sup> The stakes are high for Israel because securing an export agreement with Turkey would guarantee full-scale production from the Leviathan field, bringing a significant boost to the local economy. The initiative would launch Israel as a regional gas exporter and expand its prospects for future exports to the EU through transit pipelines that could be built through Turkey.

Even if Turkey does agree to purchase Leviathan gas, Cyprus and Turkey's contested claims over maritime space could cause a headache. Any pipeline connecting Leviathan to Turkey would have to traverse Cyprus' EEZ. Given the longstanding conflict between Cyprus and Turkey, it is unlikely that Cyprus would allow such a pipeline to proceed without a resolution to the dispute. However, Israel believes it could still push on with this despite the dispute. Even if Israeli gas does reach Turkey, the extra costs associated with its transit to the EU would reduce Israel's ability to compete with either Russian gas or American LNG.<sup>44</sup>

Given these considerations, there is little hope that Turkey will receive Israeli gas by direct pipeline or, indeed, that Turkey would act as a conduit of Israeli gas to Europe. Instead, the likeliest outcome is that Israel and Turkey continue their discussions, each with the understanding that the Leviathan field represents a 'Plan B' in the case of a resolution to the Cyprus dispute – however unlikely that seems at the moment.

Aside from pipeline options, Israel has two other means of exporting gas from the Leviathan field, both of which involve developing Israel's domestic LNG export capacity. Israel's limited shoreline and strong environmental and security factors make the construction of an LNG terminal challenging.<sup>45</sup> One of the options explored involved the use of a Floating LNG (FLNG) terminal that would allow Israel to circumvent domestic opposition to an onshore LNG terminal. Although the Australian company Woodside initially expressed interest in financing such a venture it eventually back-tracked on it in 2014.<sup>46</sup> The commercial and regulatory viability of such a project remain unclear. Another option is for Russia to invest in developing production and export facilities in Israel. Russian control over eastern Mediterranean reserves is often cited as a means to limit the ability of the EU or of Turkey to reduce their dependence on Russian gas.<sup>47</sup> This option faces political opposition, both within Israel as well as by the EU and the US.

42 "Israel-Turkey gas talks may wrap up in summer, Steinitz says", *Bloomberg*, 21 March 2017, available at <https://www.bloomberg.com/politics/articles/2017-03-21/israel-turkey-gas-talks-may-wrap-up-in-summer-steinitz-says>.

43 "Hydrocarbon Developments", p. 21.

44 Interview with senior researcher, February 2017.

45 Interview with global energy expert, February 2017.

46 "No Leviathan deal for Woodside (Israel)", *Offshore Energy Today*, 21 May 2014, available at <http://www.offshoreenergytoday.com/no-leviathan-deal-for-woodside-israel/>.

47 "Russia wants share in Israeli gas", *Globes*, 24 April 2016, available at <http://www.globes.co.il/en/article-russia-wants-share-in-israeli-gas-1001119921>.

Israel, like Cyprus, has to consider options for joint export alongside other regional players if it is to circumvent these obstacles. Unlike Cyprus, however, Israel is well-placed to utilise Leviathan resources domestically and regionally. The Israeli gas market has been evolving at a considerable pace since the discovery of these reserves and the country's gas-based electricity generation is growing. In the decade 2005 to 2015, Israeli gas consumption increased at a staggering CAGR of 17.32 percent.

Given the various infrastructure and pipeline issues faced by Israel, Leviathan's first phase is likely to serve local and regional markets (namely Jordan and possibly Egypt), rather than export markets further afield. In the meantime, Israel will exploit resources for its own purposes and continue to seek a critical mass of purchase agreements so that its exporting activities can be commercially viable.

## *Egypt*

In August 2015, Israel's aspirations to become the region's gas-export superpower were undermined by Italian firm Eni's discovery of the Zohr gas field, over 150 kilometres off the Egyptian coast. Located in deep waters, Zohr is estimated to hold about 30tcf, making it bigger than both the Israeli and the Cypriot gas fields put together.<sup>48</sup> Egypt had operated as a regional exporter since 2003, initially by pipeline and then by LNG. Exports began dropping after 2011 and ended entirely by 2014. In addition to the Jordan Gas Transmission Pipeline, through which it used to export gas to Israel and Jordan, Egypt has two LNG export facilities: Damietta, which is operated by Eni and Unión Fenosa, and Idku, which is operated by Shell. Both these facilities have run at a loss on minimal utilisation ever since Egypt ceased exporting LNG.<sup>49</sup> Even though this infrastructure could facilitate Egypt's re-entry into global LNG markets, the country's capacity to resume its role as an exporter remains a hotly contested issue.

The main challenge for Egypt is internal. The country has high domestic gas consumption, estimated at 50bcm per year, and growth is proceeding unchecked due to heavy government subsidies that artificially lower the price of electricity for end-consumers. Although domestic political unrest played a key role in hindering Egypt's exports in 2011 and 2012, these factors merely accelerated the inevitable: that Egypt would have to redirect its exports to meet expanding domestic demand. As Egypt began defaulting on its commitment to export a minimum amount of gas through its LNG terminals, Unión Fenosa, Eni, Shell and others incurred heavy losses. Lengthy discussions ensued between these international corporations and the Egyptian government to resolve outstanding liabilities owed by the Egyptian state. By 2016, Egypt had racked-up a total

48 Nicolò Sartori, Lorenzo Colantoni, and Irma Pacevicute, "Energy Resources and Regional Cooperation in the East Mediterranean", Instituto Affari Internazionali, 2016, p. 3. (hereafter, "Energy Resources and Regional Cooperation").

49 Interview with expert in global gas and LNG markets, January 2017.

debt of approximately \$3.6 billion to foreign companies.<sup>50</sup> Expanding consumption and falling production, driven largely by the absence of government investment in further exploration activities or existing ones, raised a host of domestic challenges for Egypt's government. As a matter of urgency, Egypt had to develop its import infrastructure to meet the energy shortfall as the state went on a purchasing spree on the LNG markets. In 2017, Egypt estimates it will import up to 108 cargoes of LNG.<sup>51</sup>

The discovery of Zohr injected much needed gas into Egypt's energy balance, as it is projected to produce between 20-30bcm per year for two decades.<sup>52</sup> Given Egypt's domestic demand, the bulk of Zohr's gas will probably be directed to internal markets. Yet the size of the gas field suggests that, at maximum production, a surplus could be set aside for export, allowing Egypt to resume its role as a regional exporter by 2020-2021, after the current LNG glut has passed.<sup>53</sup> There is also optimism that, given the wealth of resources in the eastern Mediterranean region, additional offshore reserves on Egypt's western coastline might be discovered. This could increase Egypt's export capacity all the more.<sup>54</sup>

The main question now is how much additional gas Egypt will be able to export after local demand has been met. Some experts take a conservative view, suggesting that Egypt has very high absorption capacity and is unlikely to be in a position to export its own gas, using nearly all of it for domestic purposes.<sup>55</sup> On the other side of the debate, government officials and international corporations have been optimistic about Egypt's resumed role as an exporter. Eni and BP, which now own 10 percent of Zohr, have indicated that Egypt is their top country for investment over the next five years.<sup>56</sup> The assurance provided by Eni and BP has allowed production from Zohr to move forward very quickly, with gas flows expected to commence by the end of 2017. Egyptian government officials have declared plans to increase Egypt's production capacity by 50 percent by 2018, with aspirations to re-enter the export market by 2019.<sup>57</sup> Officials have suggested that the Idku terminal could be running at full capacity by 2021,<sup>58</sup> although these estimates are ambitious.<sup>59</sup> It is more likely that Egypt will resume its role as an exporter by 2021-2022, when production would have sufficiently expanded and balanced out domestic demand.

50 "Eni, BP Pouring More Investment Into Egypt Than Anywhere Else", *Bloomberg*, 14 February 2017, available at <https://www.bloomberg.com/news/articles/2017-02-14/eni-to-start-gas-output-in-egypt-amid-10-billion-spending-plan>. (Hereafter, "Eni, BP Pouring more Investment Into Egypt").

51 "Egypt to Import LNG With an Eye on Self-Sufficiency in 2018", *Bloomberg*, 6 February 2017, available at <https://www.bloomberg.com/news/articles/2017-02-06/egypt-said-to-look-for-lng-as-bp-to-eni-gas-flow-to-restore-exports>. (Hereafter, "Egypt to Import LNG").

52 "Energy Resources and Regional Cooperation", p. 5.

53 Interview with expert in global gas and LNG markets, January 2017.

54 "Energy Resources and Regional Cooperation", p. 5.

55 Interviews with energy security expert and specialist in foreign policy, January-February 2017.

56 "Eni, BP Pouring more Investment Into Egypt."

57 "Eni, BP Pouring more Investment Into Egypt."

58 "Egypt to Import LNG"

59 Interview with expert in global gas and LNG markets, January 2017.

As far as the EU is concerned, Egypt's northern terminals are the most probable sources of gas supply in the entire region – Egypt has the largest natural reserves and already has the infrastructure in place to export. In this sense, Egyptian LNG would be cheaper than either Cypriot or Israeli gas, because no large capital investment is needed. No supply can compete with the price of Russian pipeline gas, but Egyptian gas could be competitive with American LNG, and provide an option for greater diversification of the EU's energy mix, lessening dependence on Russian supply. It is also entirely possible that Egyptian LNG exports could be sent through under-utilised European LNG terminals in Greece, Spain, Turkey, and elsewhere in Southern Europe.<sup>60</sup>

Egypt's ability to resume its export role will depend on a number of factors, including the health of the Egyptian economy and the energy sector at large, and the ability of Zohr to meet domestic demand and save enough surplus supply for export. If the Egyptian regime is able to maintain political stability and a healthy economy, it would be possible for Egypt to become the sole exporter from the eastern Mediterranean.

As it stands, firms such as Eni and BP appear confident in the Egyptian market and seem quite bullish in their desire to invest significant capital in building this as the region's linchpin.<sup>61</sup> Egypt itself has also been bullish regarding its prospects for exports. Under its new Minister of Energy, Tarek El Molla, Egypt has commenced a multi-year modernisation plan (EGYPS2017) aimed at reforming the regulatory and investment infrastructure of the energy sector, including through the elimination of subsidies, as a pathway to move the country towards becoming a regional hub by the early 2020s.<sup>62</sup> Both Eni and BP have responded positively to this development, but other experts are less optimistic. While they agree that Egypt has pushed forward major reforms in the oil sector, they believe the gas sector is a lot trickier because of the political sensitivity around raising electricity prices and because of the vested interest of the military.<sup>63</sup> Furthermore, it is difficult to disentangle the energy sector from the broader malaise that Egypt's economy is currently struggling with, in relation to unemployment, crippling debt, inflation, and low growth. While reform in the energy sector might be tangible, and at least in the near term, sufficiently ring-fenced from these broader ailments, international investors are right to worry about whether the current regime will be able to turn the economy around.

Investment in Egypt as a regional hub would generate a significant source of revenue that could help mitigate public debt and underpin governmental expenditure. Egyptian President Abdel Fattah el-Sisi's ability to pursue broad economic initiatives that extend beyond the vested interest of the military and the security establishment,

60 Interviews with expert in global gas and LNG markets, specialist in foreign policy, and European energy diplomat, January-February 2017.

61 Salma El Wardany et al, "Eni, BP Pouring More Investment Into Egypt Than Anywhere Else", *Bloomberg*, 14 February 2017, available at <https://www.bloomberg.com/news/articles/2017-02-14/eni-to-start-gas-output-in-egypt-amid-10-billion-spending-plan>.

62 Charles Ellinas, "Egypt Turning The Corner", the *Cyprus Weekly*, 26 February 2017, available at <http://in-cyprus.com/egypt-turning-the-corner/>.

63 Interview with global energy expert, February 2017.



and to face the painful reforms that would be needed to create the foundations for longer term growth, are the key to an economically healthy future. A revived and reformed energy sector might be just what Egypt needs to stabilise the economy and trigger medium term growth. The question is whether investors are willing to take the risk.

### *Lebanon and Syria*

Both Lebanon and Syria could discover reserves within the same Levant basin as Egypt. Lebanon has ten blocks of space off its shore that are yet to be licensed to specific international companies. Initial seismic exploration in 2012 estimated that at least 25tcf of gas could be found.<sup>64</sup> Having appointed a new president in 2016, the Lebanese parliament rekindled efforts to commence exploration.<sup>65</sup> However, Lebanon faces a significant barrier to extracting gas reserves – the more than 800 kilometres of contested maritime borders it shares with Israel.<sup>66</sup>

As for Syria, the country has relied on production from its onshore gas reserves for more than three decades. Although there has been much speculation regarding the role of gas in Syria's ongoing conflict, there is still no indication that Syria has sufficient resources in the Levantine basin that would allow it to be an exporter in the future.<sup>67</sup> Given its geographic location, Syria's importance lies in its ability to act as a transit country for pipeline gas from the region to Turkey, and possibly to the EU. Such aspirations are entirely dependent on the outcome of the war and are contingent on an end to hostilities.

### *The Palestinian Territories*

Palestinians located their own offshore gas reserves in 1999, almost a decade before Cyprus or Israel located theirs. Gaza Marine is estimated to hold about 1tcf of gas, making it a field that would only be viable for domestic consumption rather than for export.<sup>68</sup> Despite this, Israel has prevented the Palestinians from exploring this reserve, citing commercial and security concerns.<sup>69</sup> Gaza Marine is currently owned by Shell, following its acquisition of British Gas Group, the original owner of the gas field. Given Shell's divestment strategy, Gaza Marine is likely to be one of the assets that it will be looking to dispose of. Although small in size, Gaza Marine is of high symbolic importance for Palestinians, as production from this field would allow them to assert sovereignty over their natural resources. It would also give a significant boost to the economy. Israeli restrictions on

64 Haytham Tabesh, "Lebanon's politicians set aside differences on oil and gas policy", *Al Arabiya*, 22 July 2016, available at <http://english.alarabiya.net/en/business/energy/2016/07/22/Lebanon-s-politicians-set-aside-differences-on-oil-and-gas-policy.html>.

65 "Lebanon Ministerial Council Approves Decrees Pertaining Offshore Oil Resources", *Al Manar*, 4 January 2017, available at <http://english.almanar.com.lb/155681>.

66 Amiram Barkat, "Conflict with Lebanon on gas looking likely", *Globes*, 21 March 2017, available at <http://www.globes.co.il/en/article-conflict-with-lebanon-over-gas-looks-increasingly-likely-1001181811>.

67 David Butter "Russia's Syria Intervention is Not All About Gas", *Carnegie Endowment for International Peace*, 19 November 2015, available at <http://carnegieendowment.org/sada/62036>.

68 "Gaza Marine Gas Field, Palestine", *offshoretechnology*, available at <http://www.offshore-technology.com/projects/gaza-marine-gas-field/>.

69 Victor Kattan, "The Gas Fields Off Gaza: A Gift or a Curse?", *Al Shakba*, 24 April 2012, available at <https://al-shabaka.org/briefs/gas-fields-gaza-gift-or-curse/>.

such efforts have resulted in a greater degree of Palestinian dependence on Israeli gas imports. Negotiations between the players in the West Bank regarding the import of Leviathan gas means that there is little incentive for Israel to allow gas from Gaza Marine to flow, which would further undermine Leviathan's efforts to locate sufficient buyers for its own gas fields.

## Regional Approaches

There is an almost unanimous view among analysts that options for joint export by gas-rich countries would enhance prospects in the region, particularly for Cyprus and Israel. The benefits for both are clear, because without such a regional approach, Israel and Cyprus are unlikely to be able to export beyond their local markets. Of the recent discoveries mentioned above, Zohr is the only one that could possibly export gas to European markets on its own. Yet even for Egypt there are advantages to joint export. Adopting a regional approach by pooling infrastructure and resources would create an 'economies of scale' effect that would offer Egypt commercial benefits, enhance market confidence, and expand the appetite for investment in the region as a whole. There are two main options for pursuing such a regional strategy.

### *The EastMed pipeline*

One option is the construction of a pipeline that would connect gas fields in Cyprus to southern Europe through Greece, injecting gas from the Levantine basin into southern Europe's gas grid. The planned pipeline is called the eastern Mediterranean Natural Gas Pipeline, or EastMed pipeline for short. In May 2015, the European Commission declared the pipeline a PCI and initiated a technical and commercial feasibility study to assess its viability.<sup>70</sup> The outcome of the study is expected at the end of 2017. By relying on several sources of gas, most likely from Israel and Cyprus, the pipeline will necessarily have a diverse supply source; by enabling European member states to rely more on natural gas than other hydrocarbons, it will take the EU some way towards meeting its reduced emissions targets.

Although the feasibility study has not yet been completed, stakeholders who are seeking the construction of this pipeline have been encouraged by its prospects. In early April, ahead of the outcome of the feasibility study, Israel, Cyprus, Greece and Italy signed a preliminary agreement to commence preparations for the construction of the pipeline, with hopes that it would be completed by 2025.<sup>71</sup> Stakeholders supporting the pipeline suggest that there is sufficient demand for gas within Europe to make the pipeline commercially viable, even if consumption stagnates. By certain estimates, European demand is projected at 40-60bcm per year, which is in line with the export potential

70 "Eastern Mediterranean Natural Gas Pipeline – Pre-FEED Studies", European Commission, available at <https://ec.europa.eu/inea/en/connecting-europe-facility/cef-energy/projects-by-country/multi-country/7.3.1-0025-elcy-s-m-15>. (hereafter, "Eastern Mediterranean Natural Gas Pipeline – Pre-FEED Studies").

71 "Israel signs pipeline deal to push gas to Europe", the *Financial Times*, 3 April 2017, available at <https://www.ft.com/content/78ff60ca-184c-11e7-a53d-df09f373be87>.

## Proposed EastMed pipeline route



of the region, currently estimated to stand at around 50bcm per year, assuming resources in the region are pooled.<sup>72</sup> The pipeline could go some way towards securing these supplies at a capital cost of around \$7 billion.<sup>73</sup>

The EastMed pipeline could leverage the EU’s power as a reliable buyer to encourage the development of resources that would otherwise remain stranded. If the EU were to sign a long-term gas sales agreement, it could provide confidence and facilitate securing the initial capital investment needed for the pipeline to become operational.<sup>74</sup> On a commercial level, stakeholders have expressed confidence that gas delivered by pipeline to Europe in this manner would be competitive with American LNG. And from a technical perspective, the route of the pipeline is presumed to be viable despite some challenging terrain around Crete and Greece.<sup>75</sup>

Despite early optimism, a range of issues remain that might hinder the development of this pipeline. On a commercial level, many experts have suggested that it is “more pipedream than pipeline”.<sup>76</sup> There are concerns among experts and industry actors that the budgeted capital investment for the pipeline is understated and that the level of capital

investment means the gas will not be competitive, especially in relation to American LNG.<sup>77</sup> On a technical level, experts have also suggested that difficult terrain around Greece would either prohibit the construction of the pipeline or make its cost much higher than current estimates suggest. There are also suggestions that the proposed route for the pipeline fails to address the same political impasse that has plagued Israeli efforts to export directly to Turkey – namely, Turkish claims to sovereignty over Cypriot maritime space.<sup>78</sup>

For now, stakeholders are awaiting the outcome of the feasibility study, at which time the picture will be clearer. The EastMed pipeline would make Cyprus the emerging energy hub of the region, with Egypt possibly connecting its gas fields to it for future pipeline exports, if needed.<sup>79</sup> Many who view this pipeline as theoretically viable still consider it to be a longer-term project, arguing that market forces suggest Egypt could emerge as the region’s primary hub in the shorter-term.

<sup>72</sup> Interview with private sector stakeholder, February 2017.

<sup>73</sup> Interview with private sector stakeholder, February 2017.

<sup>74</sup> Interview with private sector stakeholder, February 2017.

<sup>75</sup> “Study finds EastMed pipeline viable and technically feasible”, *SigmaLive*, 24 January 2017, available at <http://www.sigmalive.com/en/news/energy/152036/study-finds-eastmed-pipeline-viable-and-technically-feasible>.

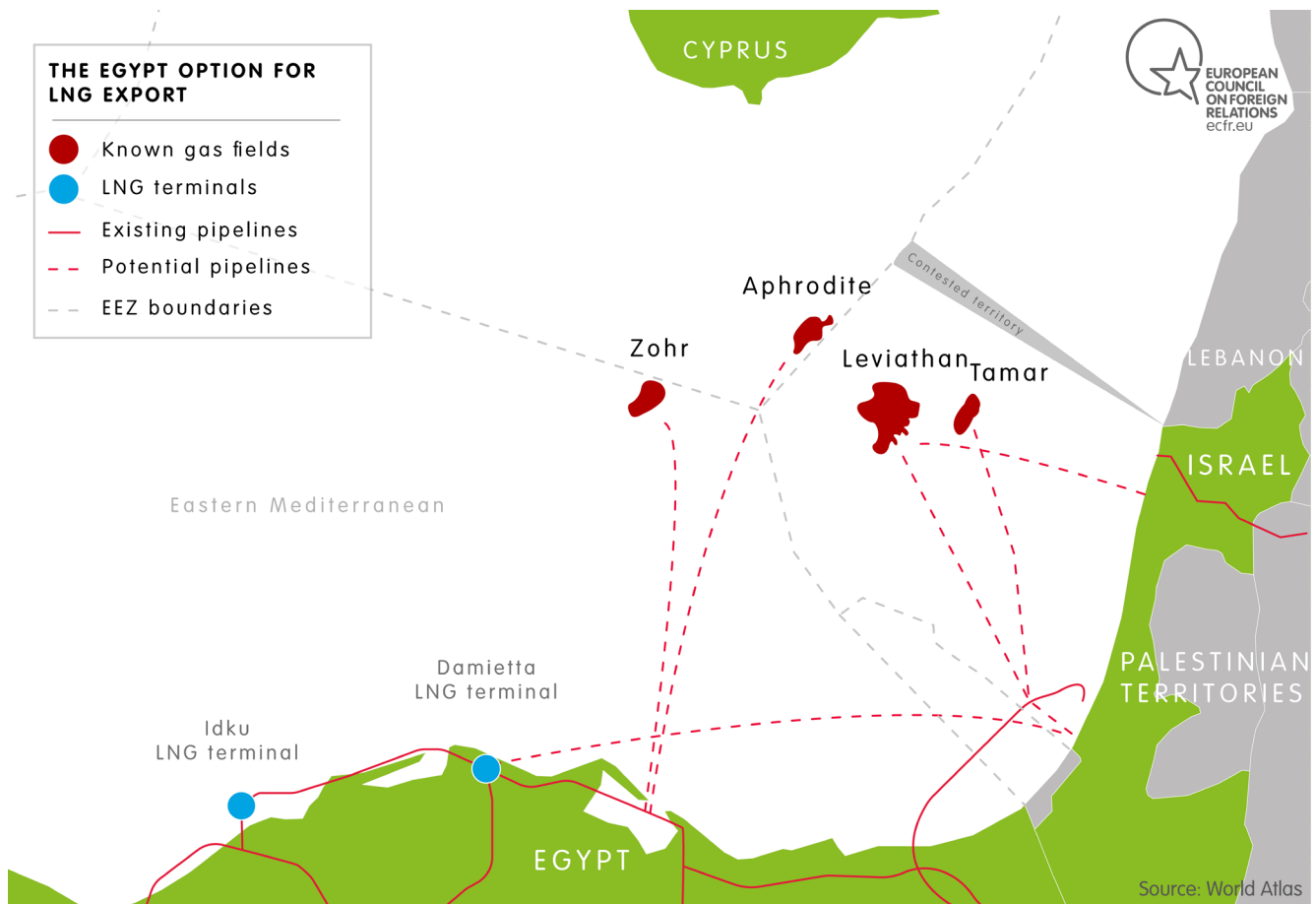
<sup>76</sup> Interview with eastern Mediterranean energy expert, January, 2017.

<sup>77</sup> Interviews with specialist in energy and foreign policy, and senior researcher, January-February 2017. See also: “Greece, Israel, Italy, Cyprus to discuss Med pipe”, *Natural Gas World*, 27 January 2017, available at <http://www.naturalgasworld.com/greece-israel-italy-and-cyprus-to-negotiate-2000-km-undersea-pipeline-to-south-europe-35631>.

<sup>78</sup> Interview with eastern Mediterranean energy expert, January 2017.

<sup>79</sup> Interview with private sector stakeholder, February 2017.

## Pipelines and LNG terminals to serve the Egypt option



### The Egypt option

The second regional approach is the so-called ‘Egypt option’. This option would involve the transportation of Israeli and Cypriot gas to Egypt for re-export from one, or both, of the LNG facilities on Egypt’s northern coastline. This approach makes use of the existing LNG infrastructure that is already available – and currently under-utilised – to facilitate regional exporting, and could fast-track the region’s emergence as source of gas for Europe. But despite having a number of advantages over the EastMed pipeline, the Egypt option isn’t without its own challenges.<sup>80</sup>

In August 2016, Egypt and Cyprus signed an agreement for a pipeline that would transport gas from the Aphrodite field to Egypt, building on previous agreements between Israel and Egypt to link Tamar to Damietta and Leviathan to Idku.<sup>81</sup> Given that Shell is the operator of the Idku plant, as well as a co-owner of Aphrodite, it could be possible to secure an agreement in which Cypriot gas is transported to Egypt solely for re-export.<sup>82</sup> This would provide Cyprus with access to the global LNG market, without restricting it to pipeline exports

alone, as would be the case with the EastMed option.<sup>83</sup> Such regional cooperation would provide Egypt with a source of revenue from Cyprus in the form of transit or tolling fees, and would allow Cyprus to access the global markets with a relatively lower capital investment than would otherwise be needed were it to export on its own.<sup>84</sup> The construction of a pipeline from Aphrodite to Egypt’s northern shore would also circumvent possible diplomatic, financial, and technical burdens faced by the EastMed pipeline.

Israel could also rely on Egyptian facilities for exporting, with a number of options for transporting its gas into Egypt for re-export through the Damietta or Idku hubs.<sup>85</sup> It would be simple enough for Israel to reverse the direction of the Arab Gas pipeline it initially used to import Egyptian gas. Israel wouldn’t be the first to reverse the flow. Jordan reversed the direction of its own pipeline with Egypt in 2015. Israel also has the option to construct a short sub-sea pipeline to connect Leviathan to the Egyptian LNG facilities.<sup>86</sup> This would likely mitigate some of the security concerns that Israel might have regarding the use of the traditional pipeline, given its exposure to attack in the Sinai

80 Interview with private sector stakeholder, February 2017.

81 “Energy Resources and Regional Cooperation”, pp. 6-12.

82 Joseph Green, “A change of course”, *LNG Industry*, 9 February 2017, available at <https://www.lngindustry.com/liquid-natural-gas/09022017/a-change-of-course/>. (Hereafter, “A change of course”).

83 Simon Henderson, “Natural Gas Export Options for Israel and Cyprus”, The German Marshall Fund of the United States, June 2013, available at <http://www.gmfus.org/publications/natural-gas-export-options-israel-and-cyprus>, p. 5.

84 Interview with expert in global gas and LNG markets, January 2017.

85 Interview with expert in global gas and LNG markets, January 2017, and “Egypt: The eastern Mediterranean’s Next Natural Gas Hub?”, *Stratfor*, 5 September 2016, available at <https://www.stratfor.com/analysis/egypt-eastern-mediterraneans-next-natural-gas-hub>.

86 Interview with global energy expert, February, 2017.

Peninsula. Like Idku, the Damietta terminal in northern Egypt has also been running on low utilisation. Using both these terminals for re-export would allow them to resume full operation, with a lower capital investment burden and commercial benefit to all actors involved.<sup>87</sup>

Although Egypt is likely able to export on its own, without needing Israeli or Cypriot gas, this option offers commercial benefits to Egypt in the form of additional revenue (from aforementioned transit and/or tolling fees) as well as further investment opportunities as the country transforms into a regional hub, such as the construction of additional terminal capacity.

One thing standing in the way of an ambitious long-term investment in Egypt is security concerns, given the political situation in Egypt and the state's poor track record of accruing liabilities to foreign partners. International concerns regarding investments in Egypt are exacerbated by the authoritarian tendencies of Egypt's current administration, and worries that it might take a politically or economically destabilising turn in the future. This is not to mention the disparate projections for Egypt's export capability, leaving a hazy picture of how much LNG capacity Egypt will have after fulfilling its own needs.

If the project goes ahead, gas sales agreements to transport Cypriot or Israeli gas to Egypt would have to deal with the question of whether gas would flow into Egypt's national grid before being re-exported, or if it would be ring-fenced for export alone. If Israel decides to export through or to Egypt, it would also have to broach the question of the debt owed by Egypt to the Israeli Electricity Company (IEC), as well as Egyptian popular protests against further trade with Israel.<sup>88</sup> Furthermore, for the agreements to be commercially viable, parties would have to enter into a commitment of at least 15 years. If Israeli and Cypriot re-exports fill all the available excess capacity of Egypt's LNG plants, there would be no capacity left within Egyptian terminals for exporting from Zohr.<sup>89</sup> All of this is up for negotiation and could make or break the Egypt option.

Some experts believe that Israel and Cyprus have already missed their opportunity to secure access to Egyptian LNG terminals. The present optimism in the Egyptian markets may result in the country reserving most of its LNG export capacity (around 19bcm per year)<sup>90</sup> for itself, from its Zohr field.<sup>91</sup> Others are less optimistic, and suggest that exports from Zohr will not fulfil the export capacity of the two terminals.<sup>92</sup> Some proponents of the Egypt option propose that Zohr should operate for local consumption and the transportation facilities be used solely for export of Israeli and Cypriot gas.<sup>93</sup> Based on current projections, the optimal

<sup>87</sup> "A change of course".

<sup>88</sup> "Energy Resources and Regional Cooperation", p.10.

<sup>89</sup> Interview with private sector stakeholder, February 2017.

<sup>90</sup> "Energy Resources and Regional Cooperation", p. 12.

<sup>91</sup> Interview with eastern Mediterranean energy expert, January 2017.

<sup>92</sup> Interview with energy security expert, January 2017.

<sup>93</sup> Interview with private sector stakeholder, February 2017.

case might be for Egypt to enjoy the benefits of acting as a re-exporter for Israeli and Cypriot gas, and prepare for further investments that could underpin exports from Zohr in the future, if those opportunities arise. Given the need for both Cyprus and Israel to access Egyptian export infrastructure, Egypt is in a good position to negotiate favourable agreements at this point as it prepares for its role as a future energy hub.

As with other options, questions remain concerning the competitiveness of Cypriot or Israeli re-exports from Egyptian LNG terminals. Given the need to recover the initial capital investment from pipeline construction costs to Egyptian LNG terminals, as well as gasification/regasification costs, it is not clear if Israeli or Cypriot LNG exports from Egypt will be able to compete with American LNG in Europe.<sup>94</sup> As for Egyptian gas, given the low production costs from Zohr, and the fact that the field is owned by Eni, which also operates Damietta, the cost of Egyptian LNG exported to Europe will be relatively low and there are good chances that it might be competitive with American LNG. Egypt is also well-positioned to gather a large market share in southern Europe.<sup>95</sup>

But Europe isn't the only export market. All exports and re-exports out of Damietta and Idku could access non-European markets, including Turkey, and Asia at-large.<sup>96</sup> The widespread options for export suggests that there is an advantage in making the Egypt option a reality. A recent expression of interest by the World Bank to explore setting up an energy hub in Egypt further underscores the attractiveness of this option.

The EU is well positioned to become involved in efforts to explore the viability of the Egypt option, as it has with the EastMed option, given its proximity and the presence of neighbourhood policies already in place to deal with this region. It would be in the EU's interests to do so sooner rather than later, as market forces are already moving in support of some permutation of the Egypt option, as seen by the major investments made by corporations such as Eni and BP.

## Prospects for EU cooperation

Many points surrounding the viability of projects in the eastern Mediterranean remain up in the air due to the ongoing feasibility studies and political barriers. For the time being, however, all countries with known reserves are pushing forward with further exploration activities, while newcomers like Lebanon take tentative steps to enter the fold. The financial and technical feasibility of the EastMed pipeline is still being explored, and the political environments of each of the potential exporters are themselves complex. Given the political and commercial factors at play, it is still possible that major reserves remain stranded, and it is unclear if gas from the region

<sup>94</sup> Interviews with eastern Mediterranean energy experts, January-February 2017.

<sup>95</sup> Interviews with eastern Mediterranean energy experts and global energy experts, January-February 2017.

<sup>96</sup> Interview with private sector stakeholder, February 2017.

## Prospects for bringing gas-to-market in the eastern Mediterranean

Options/issues	Structure	Technical issues	Commercial issues	Political issues
<b>Cyprus LNG export</b>	LNG terminal onshore or offshore Cyprus	●	●	●
<b>Cyprus-Israel FLNG/ LNG</b>	Joint LNG export plant for both Aphrodite and Leviathan	●	●	●
<b>Israel pipeline to Turkey</b>	Pipeline from Leviathan to Turkey through Cypriot EEZ	●	●	●
<b>Cyprus-Israel EastMed pipeline</b>	Pipeline from Leviathan/Aphrodite to Greece	●	●	●
<b>Egypt LNG export</b>	Ikdu and Damietta exports from Zohr	●	●	●
<b>Egypt-Cypriot LNG export</b>	Pipeline from Aphrodite to Ikdu. LNG exports from Aphrodite and Zohr	●	●	●
<b>Egypt regional hub</b>	Pipelines from Israel and Cyprus to Egypt. LNG exports from Aphrodite, Leviathan and Zohr	●	●	●

will ever reach European shores.<sup>97</sup> What's more, the glut of American LNG, which is expected to endure for at least the next five years, undermines the competitiveness of eastern Mediterranean gas, stacking the odds against the fulfilment of projects in the region – at least for the moment.<sup>98</sup> But this could change over time, leaving the eastern Mediterranean as an attractive option for gas exports.

Despite the changeable environment, the EU can still take steps where there is consensus amongst experts. This includes the adoption of an 'economies of scale' approach, and building regional cooperation to make it a reality. Such an approach is highly likely to enhance the prospects for gas production and export across the region. It would be beneficial for the EU to begin adopting measures to enable a joint framework for the development of these reserves, as it would provide the EU with energy security while allowing the regional actors to enjoy significant revenue from the gas sales. As one interviewee noted, "pooling [these resources] together can create an export powerhouse close to the EU."<sup>99</sup> While the EU would welcome such a development, it is unclear how high it sits on its priority

<sup>97</sup> Interviews with eastern Mediterranean energy experts, January-February 2017.

<sup>98</sup> Interview with eastern Mediterranean energy expert, January 2017.

<sup>99</sup> Interview with private sector stakeholder, February 2017.

list, especially given its enhanced domestic resiliency, declining gas consumption, and the presence of cheaper options elsewhere. Nevertheless, a regional energy hub, whether in the form of the EastMed pipeline or the Egypt option, has distinct advantages beyond just energy imports and exports. Assisting countries in the eastern Mediterranean in their attempts to build a regional energy hub would help to attract investment to the region, and in doing so, may contribute to the stability of the EU's broader neighbourhood.<sup>100</sup>

Ultimately, the EU is restricted to facilitating the emergence of market dynamics that offer commercial, technical, and political viability for these projects. The EU is a regulatory power, so it is best placed to help create the legal and political infrastructure, such as the regulatory framework, that could underpin a competitive gas market.<sup>101</sup> The EU can do this by actively communicating its vision for the region and positioning itself as a potential importer of gas. In doing so it can extend confidence to eastern Mediterranean prospectors.<sup>102</sup>

<sup>100</sup> Interview with private sector stakeholder, February 2017.

<sup>101</sup> Interview with eastern Mediterranean energy expert, January 2017.

<sup>102</sup> Interview with European energy diplomat, January 2017.

At the moment, maintaining a flexible approach towards the different options for bringing gas to market is the safest option for the EU, because it maximises the potential of these resources one day reaching European shores. Support for one of the options does not necessarily have to come at the expense of another. If the Egypt option does come to fruition, it does not necessarily preclude the construction of the EastMed pipeline or an Israeli pipeline to Turkey at a later stage. It is unclear how much additional gas will still be discovered in this region and what the ultimate export capacity is, so keeping an open mind makes the most sense. There are a few things the EU can do to support efforts in the eastern Mediterranean and these are outlined below.

## Recommendations

The EU should develop a more proactive approach in the area of European energy diplomacy, with a focus on facilitating the emergence of a regional gas hub. In 2015, the European Parliament stressed in its paper “Towards a European Energy Union” that gas reserves in the eastern Mediterranean should be given “an opportunity to emerge as a vibrant centre for a pipeline network transporting gas into Europe”. The parliament further stated that it “calls for a Mediterranean gas hub with increased LNG capacities [and] underlines that the EU should take advantage of the opportunities that emerge from these gas reserves in order to enhance its energy security”.<sup>103</sup> The report goes on to recommend better communication and streamlining in terms of external strategic cooperation.<sup>104</sup> The EU should continue to uphold its commitment to supporting the process through regular diplomatic contact with the relevant states. Specific mechanisms through which it could do this are as follows:

### *Fortify the EU’s energy diplomacy*

The EU is a relatively inexperienced player in the field of energy diplomacy, evidenced, in part, by the fact that there has been difficulty resolving the problem of energy diversification. Creating an institutional body focused entirely on energy diplomacy, following the model adopted by the US, could help break some of the political impasses currently hampering projects in the eastern Mediterranean.<sup>105</sup> The US’ own energy diplomacy efforts, including the creation of a special envoy, allowed the government to centralise resources and streamline the positions of various government agencies involved in energy issues. This helped to create a more effective and lean organisation that could actively pursue priorities in various regions. With explicit governmental backing and authority, the special envoy played an effective role supporting American interests, mediating in politically sensitive situations, such as the gas deals between Jordan and Israel. The EU should consider further streamlining and empowering the existing European External Action Service to pursue diplomatic initiatives that could foster dialogue between players in the region.

<sup>103</sup> “Towards a European Energy Union: European Parliament Resolution of 15 December 2015”, European Parliament, 15 December 2015, available at <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P8-TA-2015-0444+0+DOC+XML+Vo//EN>. (Hereafter, “Towards a European Energy Union”).

<sup>104</sup> “Towards a European Energy Union”.

<sup>105</sup> Interview with global energy expert, February 2017.

### *Focus efforts on building regional cooperation*

Early assumptions that the discoveries in the eastern Mediterranean would act as a catalyst for negotiations between Turkey and Cyprus have proven to be erroneous. Rather than encouraging negotiation, the projected gains to be extracted from these resources hardened the attitudes of both sides and gave birth to greater distrust between them. However, the intransigence of both sides might soften within a regional framework that unites regional stakeholders. While the initial assumption was that the gas fields would facilitate a political settlement, leading to cooperation, it might actually be that cooperation is the first necessary step for access to the gas fields, with a diplomatic push to secure a political settlement following afterwards. Such a political settlement would be vital for the longevity of any economic arrangement.<sup>106</sup> The EU should develop an ambassadorial role that helps to build regional cooperation. By positioning itself as a secure and reliable market actor, the EU’s energy diplomat can encourage and facilitate negotiations between a coalition of regional stakeholders.<sup>107</sup> Defining a broader framework for regional cooperation – one that introduces multilateral diplomacy into the mix – might offset the fear of having to make concessions, and help relieve the political blockage.

### *Create an EU-Egyptian cooperation framework*

One of the things worrying investors about the Egypt option is the state of the country’s economy. But the EU can play a powerful role in facilitating its stabilisation, which will help to win the confidence of investors. The EU is also well placed to assist Egypt in the reform of its energy sector. This would not only help to trigger growth and the emergence of a more prosperous environment for gas exports to Europe, it would also help to secure much needed stability on Europe’s doorstep.<sup>108</sup> Given the EU’s geographic proximity to and active engagement with Egypt via its neighbourhood policy, it is able to work alongside Egypt to create an environment that meets the profitability demands of investors such as Eni and BP, and provides energy security to Europe.<sup>109</sup> The EU could consider adopting a ‘bottom-up’ cooperation framework that would help to develop a more efficient sector, placing controls on consumption.<sup>110</sup> Through the creation of a multi-stakeholder taskforce composed of industry players, development experts, European bureaucrats, and Egyptian officials, a roadmap can be drawn for Egyptian energy reform and an EU-Egyptian cooperation framework. International organisations such as the World Bank are already considering this approach. However, the success of such a strategy will depend on the Egyptian government’s appetite for it.

<sup>106</sup> Interview with private sector stakeholder, February 2017.

<sup>107</sup> Interview with private sector stakeholder, February 2017.

<sup>108</sup> Interview with expert in global gas and LNG markets, January 2017.

<sup>109</sup> Interview with energy security expert, January 2017.

<sup>110</sup> Interview with energy security expert, January 2017.

### *Expand projects of common interest in the region*

If there is little appetite from Egypt for such a partnership, the EU could consider expanding the number of PCIs in the region. Designating components of the Egypt option as PCIs would allow EU resources, including budget and staff, to be allocated to the task of exploring the financial and technical viability of the option, and would enhance market confidence that the EU views the prospect with urgency and seriousness. The EU has already moved in this direction, having designated the EastMed pipeline a PCI, but it hasn't yet done the same for certain infrastructural elements of the Egypt option, including the pipelines connecting Cyprus or Israel to Egypt. There are no barriers to the EU recognising the Egypt option as a PCI because it already fulfils all three criteria.

### *Incentivise reforms in Egypt*

European Neighbourhood Policies already exist in most countries in the eastern Mediterranean, including Egypt.<sup>111</sup> However, they do not sufficiently extend into the field of energy. Expanding these policies would provide greater market security and a more robust economic and regulatory framework for energy matters. It would also secure access to EU markets. The EU could consider adding incentives through the policy, contingent on certain reforms and behaviours. These could include preferential trade agreements in fuels; EU budgetary allocations, contingent on reforms in Egypt's energy sector, which, in turn, would benefit the EU by enhancing the prospects of exporting cheap Egyptian gas; and defining confidence-building measures such as terms of exclusivity or government guarantees to underpin gas deals, again, to be made contingent on Egypt's economic performance. Such steps would facilitate the delivery of Egyptian LNG to the EU as well as mitigate the concerns of both Israel and Cyprus regarding the prospect of exporting out of Egypt.<sup>112</sup>

### *Increase engagement through the Union for the Mediterranean*

The EU is already engaged in bilateral and multilateral discussions with stakeholders in the region through the Union for the Mediterranean (UfM) – an intergovernmental dialogue institution for the region.<sup>113</sup> The UfM includes Energy and Climate Action as one of its platforms, with a focus on gas. Egypt and other eastern Mediterranean states are also engaged in this initiative. Following the EuroMed conference in Rome in 2014, this platform has acted as a launch-pad for EU-facilitated regional dialogue and cooperation.<sup>114</sup> Yet this platform has received some criticism

for being engaged solely on a rhetorical level and for failing to take active measures that put in place policies supporting the emergence of a regional hub.<sup>115</sup> The EU should further build on this platform, and its attendant Energy Diplomacy Action Plan, to more actively define this as an area of priority.

## Conclusion

The prospect for the region to transform into a source of energy and security for Europe will increase the more Europe is willing to engage. Given the relatively favourable global energy market in which the EU currently finds itself, the eastern Mediterranean might not be its top priority right now, but sustained engagement at this early stage could yield results in the future – not only in terms of supporting the EU's own energy provision and diversification, but also for improving regional cooperation and security in the Middle East. The EU should play the long game and invest early in formulating policies that can assist the eastern Mediterranean transition into a politically stable economic powerhouse.

<sup>111</sup> "European Neighbourhood Policy and Enlargement Negotiations: Egypt", European Commission, available at [https://ec.europa.eu/neighbourhood-enlargement/neighbourhood/countries/egypt\\_en](https://ec.europa.eu/neighbourhood-enlargement/neighbourhood/countries/egypt_en); and "Egypt and the EU", European External Action Service, available at [https://eeas.europa.eu/headquarters/headquarters-homepage\\_en/1156/Egypt%20and%20the%20EU](https://eeas.europa.eu/headquarters/headquarters-homepage_en/1156/Egypt%20and%20the%20EU).

<sup>112</sup> Interview with energy security expert, January 2017.

<sup>113</sup> Interview with European energy diplomat, January 2017.

<sup>114</sup> "Union for the Mediterranean's Ministerial Conference on Energy", Farnesina, 12 January 2016, available at [http://www.esteri.it/mae/en/sala\\_stampa/archivionotizie/approfondimenti/2016/12/conferenza-ministeriale-energia.html](http://www.esteri.it/mae/en/sala_stampa/archivionotizie/approfondimenti/2016/12/conferenza-ministeriale-energia.html).

<sup>115</sup> "Towards an energy revolution in the eastern Mediterranean: Any positive effect for the EU?", Center for International and European Studies, March 2013, available at [https://www.files.ethz.ch/isn/165853/NeighbourhoodPolicyPaper\(12\).pdf](https://www.files.ethz.ch/isn/165853/NeighbourhoodPolicyPaper(12).pdf).





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