

# OUTLOOK FOR GAS IMPORTS FROM NEW SUPPLIERS INTO THE EU TO 2025

BY LUCA FRANZA

CIEP PERSPECTIVES ON EU GAS MARKET FUNDAMENTALS

This paper is part of the series 'CIEP Perspectives on EU Gas Market Fundamentals'. This is the result of a comprehensive research project conducted in 2016 with a view to anticipate possible developments in gas supply and demand in the EU in the run-up to 2025 and discuss the sustainability of the EU's diversification efforts.

The authors would like to express their gratitude to CIEP colleagues and CIEP associate fellows involved in this research project for their crucial support in providing feedback and guidance. Additionally, the authors are grateful to all the external reviewers from the industry, who greatly contributed to strengthen the analysis.

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**TITLE**

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**SERIES**

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**NUMBER**

2016 | 2C

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**DESIGN**

Studio Maartje de Sonnaville

**PUBLISHED BY**

Clingendael International Energy Programme (CIEP)

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FUNDAMENTALS

# 1 INTRODUCTION

A number of countries located south-east of Europe are endowed with significant gas resources, which they wish to monetise. To various degrees, each of these countries are being considered by the EU as potential alternative suppliers of gas. Among them, those around the Caspian have long been regarded by the EU as prospective sources of diversification. In the case of Azerbaijan, long-term contracts for future supplies to the EU have finally been secured after protracted political and commercial negotiations. On the other hand, Cyprus, Israel and Iraqi Kurdistan have emerged only recently as promising alternatives.

The EU's interest in importing gas from these countries has been reinforced by the crisis in Ukraine and the subsequent deterioration in EU-Russian relations. Although the political interest for this is high, it has so far struggled to extend to the commercial realm and faces substantial geopolitical risks. The overarching commercial reason is that all the new projects designed to bring alternative supplies to the EU market are expensive and need to be underpinned by long-term contracts,<sup>1</sup> to which investors are reluctant to commit owing to the highly uncertain outlook for future European demand.<sup>2</sup>

Interest in supplies from these countries is also justified by the fact that, apart from Russia (analyzed in a separate paper of this series), Europe's current suppliers will find it difficult to increase their exports.

The possibilities that Norway's gas output (and availability of gas exports to Europe) will increase are slim, considering that fields in the North Sea, such as Troll, are mature and gradually depleting; upstream spending has dropped amidst lower hydrocarbon prices and the Norwegian Sovereign Wealth Fund is mandated to diversify from oil and gas; operating costs are high and prospective fields are expensive to develop, as they are far from the coast and/or exposed to Arctic conditions. For these reasons, in spite of Norwegian calls to the EU for creating more

1 This is confirmed by the fact that the development of Azerbaijan's Shah Deniz-2 Phase and of the SCP-TANAP-TAP pipeline system, meant to bring 10 Bcm/y of Shah Deniz-2 volumes to the EU from 2020, have been underpinned by 25-year contracts (in an era where short-term trading and hub indexation had already become widespread in Western Europe).

2 Pisca, I., 'Outlook for EU Gas Demand and Import Needs to 2025 - CIEP Perspectives on EU Gas Market Fundamentals', CIEP, 2016.

certainty on gas demand with a view to sign new long-term contracts, Norwegian exports to the EU are expected to flatten out in the period under consideration and probably beyond.

In spite of a hike in volumes in the first months of 2016<sup>3</sup>, another traditionally important supplier to Europe, Algeria, will also struggle to increase its exports to Europe in the longer term. Unlike Norway, Algerian gas exports to the EU, particularly Italy, have already fallen in the last years. Lower exports to Italy betray Algeria's difficulty in meeting its contractual obligations. In 2013, Eni and Sonatrach have agreed in a contract renegotiation that traded volumes should stay at half Eni's 20 Bcm/y contract level.<sup>4</sup> Algerian fields are mature and there are no new projects to compensate, due to slow governmental approval, infrastructural and technical inefficiencies and delays, and lack of investment partners. The country's ability to ramp up volumes available for exports is furthermore complicated by a booming domestic demand, supported by demography, rising industrial production and subsidies.<sup>5</sup>

The objective of this paper is to discuss prospects for pipeline gas imports into the EU from new, alternative suppliers. The countries covered by this report are Turkmenistan, Iraqi Kurdistan, Azerbaijan (only for volumes beyond Shah Deniz-2), Iran, Cyprus, Israel and Egypt, the last three being clustered in the Eastern Mediterranean gas province.

Three additional general considerations are necessary before moving to a country-level analysis.

The first is that in addition to supplying pipeline gas, some of these regions (notably Iran and the Eastern Mediterranean) could also produce LNG in the future. Owing to LNG's destination flexibility, however, different considerations would apply in terms of their supply potential to Europe. These are covered by another paper<sup>6</sup> in this CIEP gas series and are only briefly mentioned here insofar as they impact the outlook for pipeline supplies.

3 Algerian Gas Exports to Italy, Spain Soar, Libyan Flows Slump, Platts, 2016.

4 Franza, L., 'Developments in Gas Supplies to Europe: A March 2016 Update', CIEP Briefing Paper.

5 <http://www.forbes.com/sites/judeclemente/2016/05/04/will-algeria-be-able-to-export-more-natural-gas-and-lng/2/#78ce6e253e68>

6 Franza, L., Outlook for LNG Imports into the EU to 2025 - CIEP Perspectives on Gas Market Fundamentals', CIEP, 2016

Second, it is important to note that all of the prospective supplies to the EU analysed in this report would most likely have to cross Turkey. This country thus assumes a special importance in the discussion, also given its centrality in regional geopolitics. Turkey's growing demand for gas and quest for diversification<sup>7</sup> could impact prospects for alternative supplies to the EU in different ways, depending on the context. It appears that Turkey could either boost or hamper these prospects.

On the one hand, Turkmenistan, Iran and, to a certain extent, Israel are eyeing large-scale developments of giant fields far from both the Turkish and the European borders. For these suppliers, Turkey's growing gas demand may in fact serve as a catalyst, strengthening the economic case for large investments on expensive infrastructure. Iraqi Kurdistan and Azerbaijan, on the other hand, have smaller reserve bases. A link to Turkey would be relatively inexpensive to build and would not hinge on economies of scale or ample demand aggregation as much as the Trans-Caspian Pipeline (TCP), Iran's East-West pipeline, or an offshore pipeline from Israel and/or Cyprus. For this reason, there is a higher risk (but not a certainty) that Turkey might absorb any additional volume originating from Iraqi Kurdistan and Azerbaijan.

Last but not least, it should not be forgotten that prospects for supplies from these countries heavily depend on the outlook for Russian exports to the EU. In the past, Russia has shown its determination in pre-empting the construction of alternative pipelines to the EU.<sup>8</sup> As is discussed in a separate study, Russia's willingness to protect its market share in the EU may result in similar actions in coming years.<sup>9</sup>

The table below aims to summarise the main findings of this paper. The general conclusion that can be drawn from it is that although these countries are all to various degrees pursuing supplies to the EU, which reciprocates this interest, prospects for future supplies to the EU are complicated by both commercial and political factors. The only exception may be Azerbaijan, but additional volumes from this country would probably be small and would not significantly contribute to Europe's supply diversification.

7 Amplified by the suspension of work on Turk Stream – also due to the recent nosedive in Turkey-Russia relations over Syria and Turkey's downing of a Russian fighter jet on 24 November 2015.

8 Franza, L., 'From South Stream to Turk Stream: Prospects for Rerouting Options and Flows of Russian Gas to Parts of Europe and Turkey', November 2015.

9 Franza, L., 'Outlook for Russian Pipeline Gas Imports into the EU to 2025 - CIEP Perspectives on Gas Market Fundamentals', CIEP, 2016.



	<b>Interest in supplying the EU</b>	<b>Volumes</b>	<b>Alternative (non-EU) market outlets</b>	<b>Cost of supplying the EU</b>	<b>(Geo)political obstacles</b>
<b>Turkmenistan</b>	Specific interest in supplying the EU for diversification purposes	Potentially very large	Potentially yes, but complicated (current destination markets saturated, South Asia hard to reach, no LNG)	Probably high (cheap supplies at the Turkmen border, but TCP would be expensive)	Large: opposition from Russia (and Iran); business climate unfavourable to IOCs; Caspian waters issue
<b>Kurdistan</b>	Prioritising fast monetisation	Medium-small	Limited in number, but strong push to supply Turkey, which may absorb relatively large volumes	Uncertain, but possibly high (possible upstream challenges, processing costs probably underestimated)	Large: some internal opposition to exports due to energy scarcity; security issues (transit); dispute with Baghdad
<b>Iran</b>	Prioritising fast monetisation and integration in world gas markets	Potentially very large	If LNG is developed, many. If not, more complicated (South Asia hard to reach, regional options limited by geopolitics).	Probably high (especially driven up by the need to develop the internal pipeline system from Southeast to Northwest Iran)	Medium: some internal opposition to exports, or to exports by pipeline; lingering uncertainty on sanction phase-out and commercial terms
<b>Azerbaijan</b>	Specific interest in supplying additional volumes to the EU for both political and commercial reasons	Medium-small	Limited in number, but strong push to supply Turkey, which may absorb relatively large volumes	Probably low relative to other new prospective suppliers, as only an expansion of the SCP-TANAP-TAP system would be needed	Small: EU is in favour of additional trade and Russia has so far been unable to block EU-Azerbaijan deals
<b>Eastern Mediterranean</b>	Generally prioritising fast monetisation and local/regional use	Medium-large	Yes, especially regional and domestic markets (Egyptian domestic market and idle LNG terminals, Israeli domestic market, Jordan, Turkey)	Probably high (offshore pipeline to be built at great water depths, and long stretch in mountainous territory in Turkey to reach TANAP)	Large: some internal opposition to exports due to energy scarcity; security issues (transit); water demarcation issues; Cypriot sovereignty issue

A more detailed, country-level discussion of all the factors included in this table follows in the next pages.

## 2 COUNTRY ANALYSIS

### TURKMENISTAN

#### OVERVIEW

The Turkmen government increasingly supports plans to export gas to Europe, chiefly because the opening of a new export outlet would enable the country to further monetise its vast gas resources, which have long remained – and appear to still be – underexploited.<sup>10</sup> Turkmen officials are confident that the country can deliver up to 30 Bcm/y of gas to Europe in the next decade,<sup>11</sup> once the Trans-Caspian Pipeline (TCP) is completed. Significant political, legal and economic obstacles, however, stand in the way of Turkmenistan's plans.

#### FAVOURABLE FACTORS

From the perspective of the EU, the attractiveness of Turkmen gas lies in its potential contribution to diversification from Russian gas. In the last decade,<sup>12</sup> the EU has been exploring ways to facilitate a supply line from Turkmenistan to the European market.<sup>13</sup> Political contacts between EU and Turkmen officials (as well as among Azerbaijani, Turkish and Turkmen officials) have intensified in recent years,<sup>14</sup> particularly since the outbreak of the latest crisis in Ukraine. These exchanges led to the signing of the 'Ashgabat Declaration'<sup>15</sup> in May 2015, which, among others, lays the foundations for

10 Turkmenistan's R/P (Reserve-to-Production) ratio is 253, the highest in the world. For comparison, Russia's R/P ratio is 56 and the world average is 54 (BP Statistical Review 2015).

11 Gurt, M., 'European Union Sees Supplies of Natural Gas from Turkmenistan by 2019', Reuters, 2 May 2015.

12 Especially after May 2008, when the first 'Memorandum of Understanding and Cooperation in the field of energy between Turkmenistan and the European Union' was signed.

13 The Commission's interest in Turkmen gas is especially proven by efforts made to explore the possibility of establishing a Caspian Development Corporation (CDC), a construct conceived to favour the aggregated purchase of large, long-term volumes of Turkmen gas destined for multiple European buyers. This concept should accommodate Turkmenistan's strong preference for conducting negotiations with one single entity rather than multiple companies or Member States ([https://ec.europa.eu/energy/sites/ener/files/documents/2010\\_12\\_report\\_cdc\\_final\\_implementation.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/2010_12_report_cdc_final_implementation.pdf)).

The idea of establishing a Caspian Development Corporation was reiterated by the Ashgabat Declaration of May 2015 (infra). Another sign of the Commission's tangible interest in Turkmen gas is the fact that the EU has co-funded a preliminary environmental study on the Trans-Caspian Pipeline.

14 When the Vice-President of the European Commission in charge of Energy Union, Maros Sefcovic, visited Ashgabat in May 2015, he reiterated his support for plans to bring Turkmen gas to the EU by 2019. The TANAP-TAP pipeline system, meant to transport Azeri supplies to the EU and to also serve as a corridor for prospective Turkmen supplies, is scheduled to be completed in the same year. Russia's transport contract with Naftogaz is also due to expire in 2019. An expansion of the TANAP-TAP pipeline system would be necessary to accommodate Turkmen gas. This should be able to be achieved relatively quickly and inexpensively by simply adding a few compressor stations.

15 The extended (official) denomination is 'Ashgabat Declaration on the development of cooperation in the field of energy between Turkmenistan, the Republic of Azerbaijan, the Republic of Turkey and the European Union'.

the establishment of a Trans-Caspian Working Group and calls for joint efforts in preparing a Framework Agreement that would regulate gas trade between the parties. The Ashgabat Declaration also explicitly expresses support for instruments that would enable the long-term supply of natural gas from Turkmenistan to the EU.<sup>16</sup> This probably suggests an acknowledgment on the part of the EU that any plan to attract Turkmen supplies hinges on the signing of long-term contracts. Finally, the TCP features in the list of European Projects of Common Interest (PCIs).<sup>17</sup>

From a Turkmen perspective, mounting doubts about the absorption capacity of markets outside Europe appear to be stirring up renewed interest for exports to Europe. In fact, markets that currently receive Turkmen gas have limited upside potential. China – which presently imports 30 Bcm/y of Turkmen gas, set to reach 65 Bcm/y by 2021<sup>18</sup> – is perceived as moving towards saturation, due to both slowing demand and the prospect of abundant supplies in the form of LNG and Russian pipeline gas.<sup>19</sup> Turkmenistan's historical gas trade partner, Russia, has dramatically reduced imports of Turkmen gas in the last 7 years (from 40 Bcm in 2009 to 4 Bcm in 2015), and disagreements on pricing terms between the two countries have led to an arbitration case, which is currently pending. There are no signs that the trend of weakened Russian imports will be reversed.<sup>20</sup> The third outlet for Turkmen gas, Iran, is planning to start producing and exporting itself. Regardless of this, Iran has a bad payment record and its relationship with Turkmenistan surrounding the gas contract

16 Para. 7 of the Ashgabat Declaration, signed on 1 May 2015 ([https://ec.europa.eu/commission/2014-2019/sefcovic/announcements/ashgabat-declaration\\_en](https://ec.europa.eu/commission/2014-2019/sefcovic/announcements/ashgabat-declaration_en)).

17 Together with other components (TANAP, TAP and interconnectors) of the so-called 'Southern Gas Corridor', see para. 7.1 ([http://ec.europa.eu/energy/sites/ener/files/documents/2013\\_pci\\_projects\\_country.pdf](http://ec.europa.eu/energy/sites/ener/files/documents/2013_pci_projects_country.pdf)).

18 Turkmenistan already delivers 30 Bcm/y of gas to China through three parallel lines across Uzbekistan and Kazakhstan. A fourth line is under construction through Tajikistan and Kyrgyzstan. This will bring total export capacity from 55 Bcm to 80 Bcm. Turkmen gas exports to China are expected to reach 65 Bcm/y by 2021.

19 It is difficult to imagine that China will be able to absorb further volumes (i.e., beyond the 65 Bcm/y level expected for 2021, which looks firm), considering: a) lower-than-expected gas demand growth, also due to the slowdown in economic growth; b) the construction of the 'Power of Siberia' pipeline from Russia, which will carry 38 Bcm/y of Russian gas into Eastern China (contracts are in place); and c) abundant LNG volumes (both contracted and uncontracted).

20 Since the collapse of the Soviet Union until very recently, Russia had been a substantial buyer of Turkmen gas, which was both consumed domestically in Russia and re-exported to Europe. Lower demand in Europe since 2008-2009 and, more recently, a decline in Russian demand, coupled with disagreements on pricing terms, led Russia to unilaterally cut imports from Turkmenistan in the last seven years. The scale of these cuts is significant. As a matter of fact, Russia imported as much as 40 Bcm/y of Turkmen gas until 2009, when it curbed its annual intake to only 11 Bcm. In 2014, Russia further reduced imports to 4 Bcm/y. The latest development as of January 2016 is that Gazprom has seemingly terminated all imports of Turkmen gas, discontinuing all forms of payment to Turkmenistan. It is unclear whether this unilateral cut is definitive or whether it is only meant to be temporary. This will depend in part on the ruling expected from the Stockholm Arbitration Panel, which has been called to deliberate on this issue in 2015. In any event, given the availability of large volumes of gas within Russia itself, as well as indications that Russian gas demand will not recover substantially, and the lack of an economic incentive for Russia to resell volumes of gas purchased abroad, it is unlikely that Russia will resume imports of Turkmen gas on a level equal to or higher than those prior to 2009.

has been tense,<sup>21</sup> which may limit the appetite for an intensification of bilateral trade in the future. With regard to prospective new markets, a plan to supply Afghanistan, Pakistan and India through the TAPI pipeline has long been discussed. However, substantial geopolitical challenges – namely security issues related to Afghan transit and tense India-Pakistan relations – as well as fundamental uncertainty about Indian gas demand, cloud the prospects of Turkmen exports to South Asia.

Additionally, even assuming that Chinese demand for Turkmen gas (beyond the expansion already planned for 2021) recovers significantly, Turkmenistan nurtures the ambition to diversify its sources of gas demand. The government – which holds to a policy of neutrality and independence in international relations – appears concerned about its growing economic dependence on China and probably aims to avoid aggravating it further.

Gas is expected to come at a relatively low cost from the well to any of Turkmenistan's external borders. Turkmenistan's supply potential is helped by the fact that the country has the fourth largest gas reserves in the world (17.5 Tcm),<sup>22</sup> and furthermore that these are concentrated in one giant onshore field at Galkynysh,<sup>23</sup> which allows for economies of scale. Moreover, the field that would feed exports to Europe is already producing, rather than being a greenfield project, unlike other regions discussed in this study, such as the Eastern Mediterranean and Iraqi Kurdistan. Thirdly, Galkynysh is already connected to an East-West pipeline that reaches the Caspian shore, for prospective exports to Europe<sup>24</sup> alongside domestic consumption in Turkmenistan (but also to a potentially competing pipeline reaching the Afghan border, for prospective exports to India through TAPI).

## POSSIBLE OBSTACLES

An element that may limit Turkmenistan's interest in Europe as an export market – apart from the well-known fact that the future of gas demand in Europe is uncertain – is the ambivalent political relationship with Brussels, whose human rights and democratisation agenda is perceived as interfering with Ashgabat's sovereignty. This

21 As discussed below, Iran has vast reserves of gas itself, and after the lifting of Western sanctions on Teheran, the country is expected to boost its production – both for domestic consumption and for exports. This may reduce the need for Turkmen imports (presently 5 Bcm), which are currently used to satisfy domestic demand around Teheran (far from fields located in the Persian Gulf). Moreover, Iran has an outstanding debt of \$2bn with Turkmenistan for gas deliveries. Iran's bad payment record has led to tensions in the past, with Turkmenistan retaliating by blocking deliveries of gas into Iran. This will probably discourage the two countries from engaging in additional gas trade in future.

22 BP Statistical Review, June 2015.

23 Galkynysh ('Renaissance'), formerly known as Southern Yolotan-Osman, is the second-largest gas deposit in the world.

24 The long awaited East-West domestic pipeline was completed last year. This has contributed to bringing Turkmenistan back onto the European gas diversification agenda.

policy area has complicated energy dialogues between Europe and several Central Asian countries in the past, including Turkmenistan.

An additional factor that should be taken into account is that Turkmenistan follows the policy of selling its gas at the country's borders, without participating in the construction of pipeline projects outside of its territory. Therefore, the stakeholders in charge of financing and building this piece of infrastructure would have to be the EU as a whole (possibly through the European Investment Bank), and/or private companies (most likely organised in a consortium), and/or single EU Member States. This scheme worked well for Turkmen exports to China, as the latter country funded the international gas pipeline and is currently receiving a portion of Turkmenistan's gas as a payment 'in kind', but it is more difficult to imagine this when applied to Europe. For the sake of a speedy monetisation of additional resources and larger sales to the world market, Ashgabat would benefit from entering into a production sharing agreement with a leading European producer company or consortium. However, the contractual terms offered by the Turkmen government have so far not been appealing to European commercial entities.<sup>25</sup> This is mainly due to the fact that IOCs are not allowed to take a leading role in the development of Galkynysh and other onshore fields.<sup>26</sup>

Logistically, major uncertainties start at the Turkmen border. Prospects for the construction of the long-planned TCP appear shaky from both a cost and a geopolitical perspective. This also entails that the possible cost of Turkmen gas at the European border could be unattractive for European buyers, particularly if LNG continues to be cheap and abundant. From a geopolitical point of view, an insurmountable obstacle to Turkmen gas sales to Europe has been, and still is, strong opposition (formally on environmental grounds) from Russia, which still has substantial influence on Turkmenistan on many levels, and Iran.<sup>27</sup> Although Azerbaijan is in favour of Turkmen shipments through its territory,<sup>28</sup> the country also has legal disputes with Turkmenistan on maritime border demarcation. This could

25 Turkmenistan's business environment remains challenging, as indicated for example in the Overseas Business Risk Guidance by the UK Government. The country was not even included in the recent World Bank's 'Ease of Doing Business' Survey, as accurate information is difficult to obtain.

26 Turkmen Law allows IOCs to pursue PSAs only for the development of fields located offshore.

27 The status of the Caspian Sea has been in limbo since the early 1990s. Russia and Iran consider the Caspian as a lake and thus argue that any project touching the surface, such as a pipeline, should be approved by all five littoral states. Other littoral states regard it as sea (the Law of the Sea would then apply, enabling countries to freely exploit their exclusive economic zone).

28 The case for TCP is strengthened by the EU's and Azerbaijan's support to 'multi-sourcing' (concurrent supply from different countries) for the Southern Gas Corridor. The TCP would also allow Azerbaijan to become an important hub for gas supplies to Europe, in addition to its emerging role as a supplier.

complicate prospective exports to Europe both because Azerbaijan's political support – which is imperative – may falter, and because investors may be wary of committing to TCP in the absence of solid legal agreements on transit rights (and resource ownership, in case offshore reserves are also tapped to feed the TCP).

Although two recent developments may contribute to circumventing some of the geopolitical obstacles mentioned above, neither of them seems decisive. The first is that falling Turkmen gas sales to Russia may lessen Russia's leverage on Turkmenistan<sup>29</sup> and therefore contribute to advancing the TCP. While this argument has some grounding, it neglects the fact that Russia's economic and political influence on Turkmenistan goes beyond their bilateral gas trade relationship. The second is that the lifting of sanctions against Iran led to the materialisation of a potential alternative to the TCP: a pipeline to Europe through Iran, possibly also fed by Iranian gas. This option would have the advantage of not being subject to Caspian water demarcation problems and Iranian opposition to the TCP, as well as being less costly. However, this project remains a mere proposal at this stage, and lacks clear financial backing. It is also unclear whether dependence on an Iranian route for prospective Turkmen gas imports would be attractive for the EU from a security of supply point of view. Finally, this option does not overcome Russia's opposition to Turkmenistan's Westbound export plans.

## **IRAQI KURDISTAN**

### **OVERVIEW**

The Kurdish Regional Government (KRG) does not seem to have specific preferences in terms of export markets, and will probably support any option allowing for a quick and effective monetisation of its gas reserves. The KRG aims to export 20 Bcm/y of gas as of 2020-2021, and Turkey and Europe appear the only plausible destinations. Commercial and security-related obstacles, however, cloud prospects for Kurdish exports in the medium term.

### **FAVOURABLE FACTORS**

Iraqi Kurdistan's supply potential is supported by a good reserve base (600 Bcm in proven reserves). The local government assures that it will be able to develop gas production for local use and in addition annually export 20 Bcm of gas starting in 2020-2021.<sup>30</sup> In 2013, the KRG and Turkey signed an agreement in which the former agreed to export 10 Bcm/y to the latter by 2020. To this end, the KRG aims to start building a gas pipeline connection to Turkey in mid-2016, while Turkish

29 Previously, Russia could have threatened Turkmenistan to cut imports if there were progress on the TCP.

30 Declarations by Ashti Hawrami, the KRG Minister of Natural Resources, on Friday 20th November 2015.

companies will be in charge of building the segment inside Turkey.<sup>31</sup> A number of fields are lined up for future production and potential exports to Turkey and thence, possibly, to the EU. Unlike in other countries considered in this brief where giant fields have been found, it is still not entirely clear what and how many of the fields in Iraqi Kurdistan will be tapped to feed the planned pipeline. The discussion on Iraqi Kurdistan's supply base is in fact still open, and since prospects for Kurdish supplies to Europe will also depend on what fields are eventually developed, it is worth offering a brief overview. Fields with good potential are Miran and Bina Bawi,<sup>32</sup> which target an aggregate production of 10 Bcm/y destined for exports. Their Anglo-Turkish operator Genel aims to take a Final Investment Decision (FID) in mid-2016, while exports would not start before 2020.<sup>33,34</sup> Another gas play with concrete chances of being exploited is the one formed by the Khor Mor and Chamchamal fields.<sup>35</sup> These are already producing 3.5 Bcm/y, and may also be used to supply Turkey (and Europe). Besides, the Topkhana/Kurdamir<sup>36</sup> field has recently gained some traction as a possible early starter, as it has been fast-tracked and prioritised by the KRG.<sup>37</sup> Finally, Kurdistan may produce additional (yet limited) volumes of associated gas.

The Kurdish Regional Government (KRG) has made a political priority of gaining the ability to export oil and gas besides using them domestically, in order to earn hard cash and obtain financial self-sufficiency from Baghdad. Even more than for other prospective suppliers covered by this report, the KRG does not seem to have valid alternatives to Turkey and Europe as export markets. As a matter of fact, the realisation of links to Southern Iraq is complicated by the presence of IS fighters, a Western export route is impracticable given the conflict in Syria and, to the East, Iran, an important gas

31 Turkey also committed financial resources to the realisation of the pipeline from the KRG, and Botas recently launched the tender process. However, full funding for the Turkish segment still needs to be found (infra).

32 Operated by Anglo-Turkish company Genel.

33 This is according to international observers, namely the IEA and Oxford Energy. Local government tends to suggest much more ambitious schedules.

34 After intense negotiations between the government and Genel (the operator of Miran and Bina Bawi), a (complex) commercial structure has finally been established for the exploitation of gas in place, thus eliminating one of the most serious obstacles thus far pending on monetisation. The KRG gave better fiscal terms to Genel for its liquid production. In turn, Genel will transfer ownership of the gas to a midstream company (where Genel is expected to take a 10% stake) for only \$1.20/MMBtu. The midstream company will then be in charge of building processing plants, for which it will charge the KRG a tolling fee. Cf. WGI, 16 December 2015.

35 Operated by Emirati company Dana Gas.

36 Now operated by Spanish company Repsol.

37 The field could come on stream faster than others but is also smaller in scale. It is still unclear whether it would only serve domestic demand or also exports.

producer itself, is about to inaugurate a new export line to Iraq<sup>38</sup> and may actually become a net exporter of gas to the KRG-controlled area (infra).<sup>39</sup>

## POSSIBLE OBSTACLES

A number of factors point to the risk that Turkey may cannibalise forthcoming Kurdish exports to the EU market. While it can be argued that competition between Turkey and the EU would in reality affect prospects for supplies from all the countries covered by our study,<sup>40</sup> this possibility seems particularly applicable to supplies from the KRG. This is because of Iraqi Kurdistan's lack of a specific preference for Europe as an export destination,<sup>41</sup> more advanced negotiations for exports to Turkey, which is in turn specifically eyeing Iraqi Kurdistan as a future supplier,<sup>42</sup> and the smaller scale of both upstream and midstream developments, making commercial viability less dependent on large demand aggregation.<sup>43</sup> Other background factors, illustrated here for convenience but which also apply to considerations on supplies from other countries, are fast-growing gas demand in Turkey<sup>44</sup> and the setback suffered by the Turk Stream project following Turkey's downing of a Russian jet in November 2015.

38 Baghdad has a deal to import 9.1 Bcm/y from Iran, through an extension of the existing IGAT-6 trunk line and a newly built pipeline feeding into Eastern Iraq's Diyala province. After having been delayed for several years due to the precarious security levels in this province, a connection has finally been built and the beginning of Iranian gas flows to Iraq is now regarded as 'imminent'. Cf. 'Iraq expects imminent pipeline imports of Iran gas', *Iraq Oil Report*, 22 March 2016.

39 The KRG signed a provisional deal for future imports from Iran, but this may be complicated by tense relations between the two governments. Cf. 'Kurdistan Refocuses Gas Exports', *WGI*, 5 August 2015.

40 In fact, all the possible new supply lines discussed in this paper would have to cross Turkish territory, and probably also supply the Turkish market.

41 As mentioned, Iraqi Kurdistan (unlike all other countries included in this study, with the exception of those in the Eastern Mediterranean) has not yet developed any export scheme. For this reason, its priority is to monetise its fields quickly, regardless of the destination market. This distinguishes the KRG from governments that are seeking demand diversification.

42 Owing to the excellent political relationship established between Ankara and Erbil, Iraqi Kurdistan's proximity to Turkey, lack of transit countries and the possibility to build a cheaper onshore pipeline. On the strong political support and rationale for a gas deal with the KRG on the Turkish government's side, cf. Sanli, U., 'How the PKK is Entering Energy Wars', *Al-Monitor – Turkey Pulse*, 16 March 2016.

43 This stands out particularly against prospects for supplies from Iran, Israel and Turkmenistan, which would imply the construction of longer and more expensive pipelines. In these cases, it is less likely that Turkish demand alone would be sufficiently large to back the investments, probably calling for a combination of sales to Turkey and Europe (if anything).

44 Most scenarios concur that Turkey's gas demand is set to grow further in the coming years, although they point to different growth patterns. The IEA expects an increase in gas demand to 60 Bcm already by 2018 (IEA 2014). In the longer term, Bota sees gas demand rising by 36 Bcm over the next 15 years (Botas 2012). Bota forecasts that gas demand in the residential sector will reach 22.7 Bcm by 2030 (up from 9 Bcm in 2012), mainly due to an expansion in gas demand in large metropolitan areas. Gas demand growth in the industrial sector is projected to be more modest, with consumption at 14.1 Bcm in 2030 (up from 10 Bcm in 2012). Together with further industrialisation sustained by the highest GDP growth in the OECD area, the main driver behind gas demand growth in this sector is the lack of viable alternative fuels. However, the highest absolute growth would take place in the power sector, where Bota sees gas demand reaching 45 Bcm by 2030 (up from 21.5 Bcm in 2012). This is primarily due to estimated electricity demand growth rates of 6-7% per year. These three sectors together account for 90% of Turkish gas demand.



A second obstacle to Kurdish gas exports to Europe is that in future the KRG's appetite for exporting gas could be significantly limited by growing domestic demand. Similarly to what happened in other Middle Eastern countries, demand for gas may soar after it starts being produced domestically.<sup>45</sup> Shortages of electricity in Iraq (not only – although predominantly – outside the area controlled by the KRG) may make it politically difficult to fast-track exports. Both Southern Iraq and the KRG recently had to sign contracts with Iran to import gas,<sup>46</sup> which is somehow surprising in the case of the KRG given tense political relationships between Erbil and Teheran. This gives an idea of the perceived urgency of securing additional gas for Iraq. Authorities in Erbil will come under scrutiny if opposition parties and the public opinion perceive that the region is being deprived of energy in order to honour export contracts – especially if we consider that the (mis-)management of gas is already fuelling a heated political debate inside Iraqi Kurdistan.<sup>47</sup>

Other visible obstacles stand in the way of Kurdish gas monetisation and exports. The most important one is political instability. Apart from the threat posed by IS fighters controlling Mosul, only 80 kilometres from Erbil, the KRG and the central Iraqi government are divided by deep disagreements over the oil and gas export strategy, revenue sharing and fiscal terms. In the past few years, Baghdad repeatedly threatened to cut fiscal transfers to the KRG due to disagreements over oil and gas resource ownership. Relations are vacillating, and although an agreement has been reached, it is unclear whether Baghdad will consistently uphold export contracts signed by the KRG.<sup>48</sup> Overall, the investment climate in the area controlled by the KRG is far from unperturbed. This is not only related to the abovementioned uncertainties over the delineation of the KRG's and Baghdad's jurisdictions, but also to a number of legal disputes between the KRG itself and international investors,

45 Egypt and Oman were poised to become substantial gas exporters but failed to live up to expectations due to a boom in domestic gas demand.

46 The KRG recently signed an agreement to import 1.8 Bcm/y of Iranian gas.

47 Notably, the government is coming under increased scrutiny on the part of the main opposition party (Gorran Party), which is accusing the government of corruption, failure to develop the Chemchemal field according to schedule, failure to substitute expensive diesel imports with domestic gas production, and for the loss (\$2bn) suffered in the arbitration case with Dana Gas.

48 "Although the deal is a pivotal step forward that could lead to a significant increase in Iraq's Northern [oil and gas] production and exports, several issues between Iraq (Baghdad) and KRG remain unresolved", Iraq Country Analysis, US Energy Information Administration (EIA), last updated on 30 January 2015.

which have delayed export projects and compromised trust.<sup>49</sup> Another serious geopolitical obstacle is the marked ramp-up of PKK attacks on oil and gas pipelines in Southeast Turkey, which casts serious doubts about the security of infrastructure. Internal struggles in the Kurdish camp mean that gas pipelines from the KRG-controlled area are likely to be specifically targeted.<sup>50</sup>

An additional problem may be that Kurdistan's export plans are not fully backed from a financial point of view. Turkey is still looking for funds to finance its share of the infrastructure, and the KRG disposes of very limited financial resources. Moreover, in light of past cost underestimations, the export scheme is potentially exposed to cost overruns.<sup>51</sup> Additionally, uncertainty has mounted in recent months over the suitability of pricing mechanisms applied to the KRG's export agreement with Turkey. This is because Turkey and the KRG had signed a framework negotiation agreement for exports from the Miran and Bina Bawi fields with a pricing formula linked to European diesel prices.<sup>52</sup> However, since these prices have fallen, the export project has become uneconomical. A new formula thus needs to be negotiated. The final element possibly limiting the space for supplies from Kurdistan is that there may be upstream complications, the geology of Topkhana and Kurdamir being challenging, and Miran and Bina Bawi gas having a high sulphur content.<sup>53</sup>

## IRAN OVERVIEW

Iran is blessed with the world's largest gas reserves. After meeting domestic demand, which is forecasted to increase substantially, there would still be ample potential for exports, although not all political players support this option. Even if political support is secured for exports, it is unlikely that these would specifically target Europe. The

49 Disputes between Dana Gas and the KRG began in 2009 when Dana Gas accused the KRG of underpaying for its hydrocarbon assets. Dana Gas and the KRG then went to arbitration on issues such as ownership of underground resources, interpretation of fiscal terms and Dana's right to export products. Among others, the KRG claimed entitlement to a share of the proceed of a farm-out operation and denied Dana the right to sell LPGs and condensate at international market prices. Dana Gas won the arbitration case and obtained the right to a \$2bn compensation. Regarding the Repsol case, the KRG stated that before being acquired by Repsol, Topkhana's and Kurdamir's operator Talisman had forfeited operatorship of Kurdamir, which would therefore come under the ownership of the KRG. Repsol opposed this view. The dispute has reportedly been settled and the KRG has fast-tracked the development of these fields.

50 On 9 February 2016, the Group of Communities in Kurdistan (KCK), an organisation affiliated with the PKK, declared it opposed Erbil's gas exports to Turkey. Even more moderate political forces such as HDP, the party representing Kurdish interests in the Turkish parliament, expressed their opposition to the deal. A week later, the PKK blew up an oil pipeline from Iraqi Kurdistan to Turkey, which caused a \$300 million economic damage to the KRG. Cf. 'Pipeline sabotaged by PKK costing KRG \$14m a day in losses: Minister', Rûdaw, 23 February 2016; and Burgess, J., 'PKK Attacks Turkey-KRG Oil Pipeline', Oilprice.com, 18 February 2016.

51 For example, the estimated cost of the processing plants to be built by the newly created midstream company is too low.

52 WGI, 18 February 2015.

53 Up to 30% H<sub>2</sub>S in the case of Bina Bawi.

prospect of selling gas as LNG – which seems to be preferred by Iranian policy-makers – clearly competes with the notion of building pipelines to Europe.

## FAVOURABLE FACTORS

Iran has enormous gas reserves (34 Tcm),<sup>54</sup> part of which lie in the giant South Pars field in the Persian Gulf. Additionally, there are promising brownfields in the Iranian onshore. Iran's supply potential is supported by the fact that oil and gas activities have continued in past years. Work on South Pars was carried out<sup>55</sup> by local firms amidst stringent sanctions,<sup>56</sup> laying the groundwork for the moment when they would be lifted.<sup>57</sup> Iran is currently offering 23 gas fields to international companies, and the plan is to develop 25 phases in total. Estimates by independent observers show that the output from the South Pars phases that are more than 50% complete – i.e., those with good prospects of being finalised – would be around 330 Bcm/y.<sup>58</sup> As domestic demand is expected to reach 210 Bcm/y once these phases are completed, there would indeed be ample room for exports.<sup>59</sup>

Political momentum to export gas is high in Iran since the sanctions have been lifted, as the country has the ambition to be re-integrated in global energy markets. The government will probably pull its political weight behind export projects. Similarly to in Turkmenistan, this is also regarded as an opportunity to further monetise the country's underexploited gas potential.<sup>60</sup>

An element that encourages Teheran to look in the direction of Europe for future gas pipeline exports is the lack of a viable regional market that can be reached by pipeline. Apart from Oman, Iraq and Turkey (infra), sales to Middle Eastern countries are highly unlikely due to traditionally tense (and worsening) political relations. Value foregone owing to geopolitics is remarkable in this case if we consider that the Middle East could be a huge destination market for Iranian gas in light of the very short distances and the fact that this is the world's fastest growing region in terms of

54 BP Statistical Review, June 2015.

55 Although with delays induced by technical problems, lack of materials and technologies, lack of access to capital, and cost overruns.

56 It should not be forgotten that Iranian gas production has grown fivefold in the last 20 years.

57 South Pars' Phase 12 came on stream in spring 2015 before sanctions were lifted and significant progress was made also on Phases 15-16, 17-18 and 19, which are now due on stream by the end of 2016.

58 WGI, 24 June 2015.

59 Estimates by the government are even more ambitious. The Iranian government notably plans to hoist processing capacity to 360 Bcm/y by 2021 from about 260 Bcm/y now, and to bring total domestic output to 520 Bcm by 2021. See, for example, declarations by Rokneddin Javadi, Deputy Oil Minister and NIOC Managing Director.

60 Iran's R/P ratio is 197, one of the highest in the world. For comparison, Russia's R/P ratio is 56 and the world average is 54 (BP Statistical Review 2015).

gas demand outside of China.<sup>61</sup> It is interesting to note how, in the case of Iran, Turkish demand may have an ambivalent impact on prospects for exports to Europe: on the one hand, Turkey may compete with the EU as a destination market; on the other hand, it could be argued that the presence of an expanding market in Turkey could act as a catalyst for Iranian exports to Europe by increasing the chances of a pipeline being built from the Persian Gulf to Northwest Iran, some of the capacity of which could ultimately be used to service the European market.

To the East, construction on the long-planned IPI pipeline to Pakistan and India<sup>62</sup> is progressing very slowly.<sup>63</sup>

### POSSIBLE OBSTACLES

Despite the fact that the government seems to promote exports, diverse political positions exist within the country. Some political circles, such as those connected to industrial interests and fringes of the Revolutionary Guard, strongly oppose the plan to export gas, claiming that gas reinjection of oil production or the use of gas as a feedstock for higher added value petrochemicals would bring greater benefits to the Iranian economy. Indeed, as discussed in the following section, the necessity to satisfy booming domestic demand may soften enthusiasm for exports.

Also, even assuming that strong political support is secured for exports, it should not be taken for granted that these would target Europe. The prospect of selling gas as LNG clearly competes with projects to build pipelines to Europe. To date, LNG seems to be preferred by Iranian policy-makers. First, because it offers more optionality in terms of destinations and connectedness with global gas markets. Second, because Iran's giant South Pars field is located near the Persian Gulf coast and far from Europe. Third, LNG terminals are more scalable than pipelines, as well as faster<sup>64</sup> to build in response to changes in global market fundamentals.

As mentioned, however, domestic demand could soar beyond expectations, as has been the case in the last decade,<sup>65</sup> drying up Iran's export base. Among the factors that will drive up domestic consumption are sustained population growth, the

61 According to the World Energy Outlook 2015.

62 This would supply 22 Bcm/y to Pakistan and potentially India when completed.

63 Iran has built all of its 250 km, and China has financed 700 km inside Pakistan (from the port of Gwadar Eastwards), so only 80 km linking Gwadar to the Iranian border are actually lacking. However, Pakistan does not have the resources to build the connection, which would have to cross a region – Baluchistan – exposed to remarkable security risks.

64 However, it would take at least 3 years to bring Iranian LNG on stream.

65 Gas demand jumped by 66% between 2005 and 2014, making Iran the fourth consumer of gas demand in the world after the US, Russia and China, and the second fastest growing after China.

economic expansion that will probably follow the lifting of the sanctions, gas-for-oil substitution policies currently implemented by the government, oilfield gas reinjection requirements and the planned development of added-value industries that use gas as feedstock. The country is still in a situation in which it suffers from gas shortages. Gas swaps with Russia through Azerbaijan have recently been discussed, and Iran is still importing some gas from Turkmenistan to supply its Northern regions. To meet demand, around \$60 billion needs to be invested over the next five years in gas processing, distribution and storage, potentially reducing the availability of resources to be invested in export infrastructure.

This leads us to discuss another obstacle to Iranian pipeline exports to Europe. Substantial investment would be needed to bring large additional volumes of gas through mountainous terrain to Northwest Iran to tap into Europe's Southern Gas Corridor. Even now that sanctions are being lifted, access to international capital and technology may be problematic – also due to the fact that the lifting is gradual and secondary US sanctions are still in place.<sup>66</sup> Additionally, the abovementioned pipelines would most assuredly require long-term contracts, which European buyers cannot sign in the current market environment. No pipeline option seems commercial at current European gas prices,<sup>67</sup> and there is also deep disagreement within Iran as to what would constitute an acceptable export price.<sup>68</sup> Moreover, there are contracts that have already been signed and that will need to be honoured first, namely with Turkey (10 Bcm), Iraq (10 Bcm), and Oman (5 Bcm).

Finally, the new Iran Petroleum Contract (IPC)<sup>69</sup> is still being finalised. As long as there is lingering uncertainty on terms, international investors are unlikely to commit fully.

## **AZERBAIJAN**

### **OVERVIEW**

Azerbaijan has consistently displayed its interest in exporting gas to Europe, which it will supply with 10 Bcm/y of gas starting in 2020. Independent studies show that by the late 2020s, further uncontracted Azeri volumes may amount to 15 Bcm, half of which could reach Southeast and Central Eastern European markets seeking diversification from Russian gas. Relative to other projects discussed in this paper, pre-FID Azeri projects will have the distinct advantage of building on an infrastructure

66 Those imposed by the US Congress in reaction to the 1979 hostage crisis, preventing companies such as Chevron and Exxon from returning to Iran.

67 WGI, 24 June 2015.

68 WGI, 20 January 2016.

69 Set to replace the old buyback programme.

system that will by then be in existence, but they appear to be quite small in volume and would probably not make a big difference in terms of diversification for Europe.

## FAVOURABLE FACTORS

Azerbaijan's interest in supplying gas to Europe has been proven by the country's readiness in inking long-term deals with European buyers for supplies through the Southern Caspian Pipeline, Trans-Anatolian and Trans-Adriatic pipeline system (SCP-TANAP-TAP). Based on these contracts, 10 Bcm/y of Azerbaijani gas will reach the EU by 2020. Eight Bcm/y will be sold on the Italian market, and thence possibly further into Western Europe, and 1 Bcm/y each to Bulgaria and Greece. The EU has actively promoted and facilitated the opening of this new supply line, also by granting an exemption from Third Party Access (TPA) to the first phase of the TAP.

The presence of an established commercial framework and infrastructure upon which supplies to Europe can build differentiates Azerbaijan from other prospective suppliers described in this brief. The existence of an initial SCP-TANAP-TAP line is in fact expected to stimulate new investments targeting Europe, as partners would have 'the incentive to explore, develop and produce gas from the Shah Deniz Phase-3 to maintain gas deliveries to customers through extension of the Gas Sales Agreements'<sup>70</sup> once these tail off in 2030. Socar, notably, is a shareholder in this pipeline system and will clearly have a strong interest to promote additional deliveries, while possibly lacking the appetite for non-Azeri gas flowing through TANAP-TAP.

Bullish scenarios project that Azeri production will reach 55-60 Bcm in the mid-2020s.<sup>71</sup> The prospective fields from which additional production beyond already contracted volumes from the second phase of Shah Deniz would originate are the Absheron field (by 2021-2022), the Umid/Babek field (by 2026-2027), and the Azeri-Chiraz-Guneshli (ACG) with non-associated volumes (by 2027-2028).<sup>72</sup> Based on these prospects, an independent study found that uncontracted Azeri volumes may reach 15 Bcm in the late 2020s.<sup>73</sup> According to the same study, half of these would

70 Rzayeva, G., 'The Outlook for Azerbaijani Gas Supplies to Europe', Oxford Institute for Energy Studies (OIES), June 2015.

71 'Turkey as an Energy Hub: Opportunities and Challenges', Hazar, 2014.

72 Favourable factors are that the exploration phase has been completed and is promising for all these fields, that partners stated their interest in completing appraisal and further work, and that geological complexities have largely been solved, again for all the fields. The specific advantage of the Absheron field is that it is the only project backed by a PSC (Production Sharing Contract). Its operator Total is targeting 2021 as a starting date, and its expected output is 5 Bcm/y for 26 years.

73 Rzayeva, G., op.cit.

satisfy additional Turkish demand, while the other half could reach Southeast and Central Eastern European markets seeking diversification from Russian gas.

With regard to the export infrastructure, the current capacity of the SCP, i.e., 8 Bcm/y,<sup>74</sup> is already being expanded to 26 Bcm/y in order to accommodate Shah Deniz Phase-2 output,<sup>75</sup> and further expansions of the SCP would be relatively easy to achieve.<sup>76</sup> The option to further expand it by another 10 Bcm/y on top of the ongoing expansion has already been considered by project developers.

The option exists to expand TANAP – which is set to be operational by 2018 – to ship 23 Bcm/y by 2023 (to accommodate volumes from Absheron field) and up to 31 Bcm/y by 2027-2028 (to accommodate volumes from Umid/Babek and ACG). TANAP's capacity would then be further expandable to 60 Bcm/y after 2030, probably hinging on a scenario in which it would accommodate volumes from all Azeri fields alongside volumes from other regions described in this paper.<sup>77</sup>

The TAP is also covered by plans for capacity expansion. A further 10 Bcm/y expansion would be relatively easy to achieve, as it would simply require new compressor stations. However, there might be TPA-related regulatory issues limiting its (exclusive) use by Azerbaijan, as the exemption granted by the European Commission does not apply to the second branch.

Surrounded by small (Georgia) or politically hostile (Armenia) markets, as well as by gas-rich countries (Russia and Iran), Azerbaijan does not have many alternative export markets other than Turkey and the EU.

## POSSIBLE OBSTACLES

On the other hand, a factor that may reduce Azerbaijan's appetite for additional exports to Europe is growing domestic demand.<sup>78</sup> Azerbaijan is even discussing the option of importing gas from Russia in the short term, fuelling speculations that it may not have enough gas to honour contracts (let alone to sign new ones).

74 Rzayeva, G., *op.cit.*

75 Shah Deniz Phase-2 is set to produce 17.6 Bcm, all for export via SCP-TANAP-TAP: 1 Bcm will be sold to Georgia, 6.6 Bcm to Turkey and 10 Bcm to the EU. Contracts have been signed for 25 years, with deliveries starting in 2020.

76 Socar will play a key role in deciding about future expansions, but SCP consortium partners would have to agree on funding and upstream partners on tariffication. Also, expansions will obviously depend on the upstream cost profile and related decisions by field consortium members.

77 Akhundzada, ISPI and Koch, Egmont.

78 Rzayeva, OIES: Domestic demand in Azerbaijan projected to increase to 15 Bcm in the 2020s (up by 5 Bcm from the current level of 10 Bcm).

A few upstream challenges also limit the availability of future Azeri exports to Europe beyond already contracted volumes. Notably, scarcity of drilling rigs is often quoted as a factor that is greatly delaying projects. Output from the Absheron field is also expected to come at a high cost, due to very high pressure in the reservoir. Work on the Umid/Babek and the ACG field is lagging behind, and their acreage holders still need to enter into a Production Sharing Contract (PSC) with Socar.

Overall, future Azeri exports to Europe appear quite small in volume and would probably not make a big difference in terms of diversification.

## **EASTERN MEDITERRANEAN OVERVIEW**

Both Cyprus and Israel have expressed interest in the past in exporting gas to Europe. Plans to export Eastern Mediterranean gas to Turkey and Europe have gained some traction again in 2015-2016. One of the options that has received attention is a pipeline from Israel to Turkey. This would then be linked to TANAP with a view to supply the EU as well as the Turkish market. However, many other options, including projects for regional sales and LNG terminals, have also been considered in recent years, competing with prospects of exports to Europe. It is also unclear whether recent discoveries in Egypt will jeopardise or complement Israeli and Cypriot export plans.

## **FAVOURABLE FACTORS**

Israel has large gas fields such as Leviathan (600 Bcm) and Tamar (280 Bcm).<sup>79</sup> In terms of export routes, one option that has received attention is a 16-30 Bcm/y planned pipeline from Israel to Turkey.<sup>80</sup> This would then be linked to TANAP with a view to supply the EU as well as the Turkish market. Plans to export Israeli gas to Turkey and Europe have gained traction again in 2015-2016 as a result of drawbacks in the Gazprom-brokered Turk Stream project and the finding of substantial amounts of gas in the Egyptian offshore, as Egypt was previously supposed to be one of the main outlets for Israeli gas.

In fact, Egypt hosts the largest gas field in the region at Zohr (850 Bcm), discovered by Italy's Eni in 2015. This finding may not only allow Egypt to reassume its past role as a large gas producer and exporter, but arguably also could help prospects for monetisation of Israeli and Cypriot gas by abating unit costs of production and transportation in the Eastern Mediterranean as a whole. In fact, evacuation

<sup>79</sup> These figures refer to proven reserves.

<sup>80</sup> 16 Bcm/y is the capacity targeted by Turcas in its feasibility study. 30 Bcm/y is the capacity recently indicated by the Turkish press.



infrastructure could be bound together in an 'Eastern Mediterranean hub' composed of sub-sea pipelines from the Aphrodite and Leviathan fields to the Zohr field and then on to producing fields in the Nile Delta, Egyptian LNG terminals and finally the Egyptian coast.<sup>81</sup> This united pipeline system would help to achieve economies of scale and allow further cost savings, as it would build upon existing infrastructure. Moreover, it would minimise security risks that would otherwise be high in the case of an onshore pipeline via Sinai.<sup>82</sup>

While Egypt chiefly aims to feed its LNG terminals and satisfy domestic demand without expressing preferences in terms of destination markets, Cyprus and Israel have expressed their interest in exporting gas to Europe, due in part to their relative isolation from large gas markets. Cyprus, in particular, is an EU Member State without a domestic gas market at the moment and limited export potential in the region due to its insularity and a lack of diplomatic relations with Turkey. After intense political discussions, Israel's Tzemach Committee approved the export of natural gas from the country, although a 60% quota for domestic use has been imposed.<sup>83</sup>

## POSSIBLE OBSTACLES

Many other options have also been considered in recent years, competing with prospects of exports to Europe. At first, LNG seemed to have the potential to steal the stage from exports to Europe as the preferred way of monetising local gas reserves. More recently, particularly as a result of low LNG prices, this role has been taken over by regional sales to Egypt, Turkey and Jordan.

Moreover, there are still strong pressures within Israel to keep gas for the nation's own use. Security of supply concerns are high, especially after the country suffered disruptions of gas flows from Egypt. Besides, the government wants to minimise imports – as the Israeli energy import bill reached 11% of GDP – and has set out a plan to produce 75% of its electricity from gas. The existence of different agendas within Israel is reflected in political and legislative uncertainties, which have so far hampered monetisation and deteriorated the country's business climate. The approval of the Israeli Natural Gas Framework in 2015 seemed to have solved the

81 Momentum is particularly high for Israeli sales to Egyptian LNG terminals (preliminary agreements for 7 Bcm/y to Idku LNG from the Leviathan field and 4.5 Bcm/y to Damietta LNG from the Tamar field).

82 Eni's CEO Claudio Descalzi met with Prime Minister Benjamin Netanyahu to discuss the joint development of natural gas in the Eastern Mediterranean through joint export infrastructure deals with Cyprus, Israel and Egypt.

83 Bar Evi, A., 'Netanyahu: Israel to Allocate 60 Percent of Natural Gas to Domestic Needs', Haaretz, 19 June 2013.

regulatory conundrum that had previously blocked Israeli export projects,<sup>84</sup> but a court ruling in March 2016 brought this into question. As a result, in PM Netanyahu's own words, Israel is "seen as a state with excessive judicial interference in which it is difficult to do business".<sup>85</sup>

As mentioned, it is still unclear as to what extent Egyptian gas can actually team up (rather than compete)<sup>86</sup> with Cypriot and Israeli gas for sales outside the region. This clearly also depends on the pace at which Egyptian gas demand will grow,<sup>87</sup> the actual scale of commercially viable reserves in Zohr,<sup>88</sup> the progress in the development of BP's West Nile Delta (WND) field, and the evolution in the political discussion in Egypt.<sup>89</sup>

Unlike Israel and Egypt, international investors in Cyprus declared that the Cypriot reserve base, clustered in the Aphrodite field (110 Bcm), is insufficient<sup>90</sup> to start field development. Exploration is still ongoing in Cyprus, and the hope is that the country will strike more gas to consolidate its reserve base.<sup>91</sup> Under these circumstances, the only concrete plan for the monetisation of Cypriot gas is thus local, or regional at best. A possibility would be to establish a 1-2 Bcm local gas market and sell some of the surplus gas to the now idle Idku LNG terminal in Egypt.

Finally, a major obstacle to the realisation of a pipeline to Turkey and Europe is that the only available sub-sea route for Israel passes through Cyprus' exclusive economic zone (EEZ). This is a problem because Cyprus currently denies the use of this route to Turkey in the absence of a comprehensive settlement of the Cyprus question. The construction of a pipeline from Israel or Cyprus to Turkey is also technically challenging and expensive to build, considering that water depths reach 2,000

84 The approval of this plan hinged on the resignation of Israel's Minister of Economy Aryeh Deri, who refused to sign off on a compromise that would allow investors to bypass an antitrust case launched by regulators against Noble and Delek, accused of forming a cartel that would distort domestic prices. In the course of 2015, PM Netanyahu personally intervened to bypass the antitrust case by declaring the development of Israel's gas resources a 'national priority'. The PM took over the role of Minister of Economy to fast-track gas exploitation.

85 Kershner, I. and Reed, S., 'Israeli Court Strikes Down Natural Gas Development Deal', The New York Times, 27 March 2016.

86 Israeli stock exchanges collapsed following news of the Zohr discovery.

87 By 2012 gas was providing more than 50% of Egypt's energy needs (up from 30% in the early 2000s). During that period, natural gas demand grew by 8.7% per year.

88 The size of the Eni Zohr finding has not been certified yet. Reserve estimates are 850 Bcm but are unreliable given insufficient appraisal.

89 From Brookings: "Before ex-President Morsi was overthrown in 2013, he was being blamed for a series of power outages that had swept the country, leaving the population increasingly frustrated. The Egyptian government understands the importance of providing cheap energy for stability. Even the army has gotten involved and is currently building a series of power stations to support the ever-strained electrical supply."

90 See also WGI February 2015.

91 Notably by ENI and Total.

metres. Besides, an Israeli pipeline to Europe would also require the construction of a 500-km pipeline inside Turkish territory from the Turkish coast to TANAP through mountainous territory. It is unclear who would be able to invest in this section. Moreover, Turkish-Israeli relations are still difficult, particularly following Israel's military operation against civilian ships of the Gaza Freedom Flotilla in 2010.<sup>92,93</sup>

92 The military operation conducted by Israel took place on 31 May 2010 in international waters in the Mediterranean Sea and resulted in the death of nine Turkish citizens.

93 According to a number of observers, Israel and Turkey are trying to normalise their relationship because of mutual energy interests. It has been reported that Israel would be willing to pay Turkey compensation for the 2010 raid against the Gaza Freedom Flotilla and that Turkey has agreed to crack down on Hamas members operating from Istanbul. Cf. Johnson, K., 'A Gas-Powered Rapprochement Between Turkey and Israel', 18 December 2015.



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