

# The Evolution of Energy Fluxes and Cooperation Models in the Middle East

by Robin Mills

## ABSTRACT

Despite its dominance as the world's key exporting region of hydrocarbons, energy connectivity within the Middle East, in the form of cross-border oil and gas pipelines, electricity grids and related institutions, is lagging. There has been limited progress in the Eastern Mediterranean area and with Turkey. But so far unfavourable commercial conditions, persisting subsidies, and regional political suspicions and disputes, have hampered progress. Key changes in the world energy market – a period of lower oil prices, with the expansion of US shale production, the globalisation of natural gas trade, the rise of renewable energy, and growing action on climate change – should encourage more intra-regional links. To realise the prize of 25 billion to more than 100 billion US dollars of savings available from greater energy trade, regional states will have to liberalise energy markets, establish multilateral institutional frameworks, and make the most of support from international energy corporations and influential political players, notably the US, China, EU and Russia.

*Middle East | Energy | External trade | Regional integration*

**keywords**

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by Robin Mills\*

### Introduction

The history and future of energy trade within the Middle East presents a curious paradox. The region remains the world's leader in oil resources and production, a strong player in gas, and an emerging one in solar power. It has a pivotal geography. And yet, in contrast to its massive hydrocarbon exports, energy trade and connectivity within the region remains very limited. This is historically understandable in view of small domestic markets, largely self-sufficient in energy. But rapid economic and population growth, and the turn to higher-cost hydrocarbon resources, has required several regional states to turn to energy imports to meet their needs. Nevertheless, cross-border projects have remained a rarity, and those that have gone ahead have taken a long time to reach fruition and been beset by many problems.

Part of this conundrum lies in commercial models, revolving around large state-owned enterprises, a lack of real markets, and subsidized energy provision, that have not supported trade. A yet more important reason lies in regional suspicions, political disputes and conflicts that have impeded cooperation.

The key question is: will this change, and if so, where? The global energy market is undergoing enormous upheaval, including the rise of US shale oil and gas production; the globalization of the liquefied natural gas (LNG) business; the cooperation of the Organization of Petroleum Exporting Countries (OPEC) with Russia and other peers;<sup>1</sup> the growing dominance of emerging Asia as the energy growth market; the rapidly rising competitiveness of renewable energy and electric vehicles; and increasingly stringent action on climate change. These

<sup>1</sup> Richard Mably and Yara Bayoumy, "Exclusive: OPEC, Russia Consider 10- to 20-year Oil Alliance - Saudi Crown Prince", in *Reuters*, 27 March 2018, <https://reut.rs/2upwsnZ>.

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interact with the Middle East's severe long-term economic, environmental and political challenges. Changing markets and politics create opportunities for some new energy fluxes to emerge, while the promise of others recedes.

### 1. The history of Middle East energy trade

#### 1.1 *The shape of Middle East energy trade*

The Middle East remains the world's premier oil-exporting region. In 2017, it exported 7.2 billion barrels of crude oil, 45 per cent of internationally traded oil,<sup>2</sup> and another 1.4 billion barrels of refined products, 17 per cent of the world total. Only 1.8 per cent of the crude oil and 5.5 per cent of the products went to other destinations within the Middle East. In gas, 2.5 per cent of LNG exports by Middle Eastern countries went elsewhere in the Middle East, and 15 per cent of the region's gas exports (mostly because of the Dolphin pipeline, and some pipeline exports from Iran to Iraq).<sup>3</sup>

The lack of oil trade is understandable, given that most countries are significant oil producers, and those which are not, such as Lebanon and Jordan, are small economies. Most regional countries have developed substantial refining capacity to meet most of their domestic requirement. The lack of gas trade, though, is more surprising given the region's uneven distribution of gas resources, as discussed further below.

Water is not discussed in detail here, but is another critical regional resource, in increasingly short supply, and is closely linked to energy because of its use in oil-field pressure maintenance (particularly an issue in Iraq) and because of the near-total dependence of the Gulf Cooperation Council (GCC) states on energy-intensive desalination for potable and industrial water. There is no water trade as such in the region, but major rivers – the Tigris, Euphrates, Nile, and tributaries of the Shatt Al Arab – cross national borders. Embodied water is traded in the form of food.

Within this limited pattern of trade, three sub-regions can be distinguished: the Persian Gulf (Arabian Gulf in many Arab sources); Iraq, Iran and Turkey; and the Levant. There are some land interconnections within each of these regions, very little between them, and very little with the outside world except in the case of Turkey. Other than this, and a few electricity interconnections and some trucking of oil, energy trade within the region is mostly confined to shipping: crude oil, products, and LNG exports. Qatar is the dominant LNG exporter in the region,

<sup>2</sup> BP, *BP Statistical Review of World Energy 2018*, June 2018, <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2018-full-report.pdf>. Using 7.29 barrels = 1 tonne.

<sup>3</sup> Ibid.

but its exports to the United Arab Emirates (UAE) have been prevented since the imposition of an embargo by the UAE itself, Saudi Arabia, Bahrain and others from May 2017.<sup>4</sup> Abu Dhabi, Oman and episodically Egypt continue to export LNG, while Dubai, Abu Dhabi and soon, likely Sharjah (three of the seven emirates of the EAU), Kuwait (with an expanded onshore terminal due in 2021), Jordan, Egypt (until recently), and in the future Bahrain and perhaps Lebanon import LNG. Egypt and Abu Dhabi are in the odd position of both importing and exporting LNG.

This prevalence of LNG trade is an odd phenomenon in a relatively small, gas-rich region where, as in Europe, pipelines would generally be considered the cheapest way of moving gas from source to consumer. Overall, the lack of interconnection contrasts sharply with Europe or North America, or even the post-Soviet space. It resembles more Latin America or South-East Asia, a balkanized energy market with a limited number of interconnections, a stress on national self-sufficiency, and a growing dependence on LNG imports from the international market.

In 2015, the Arab Fund for Economic and Social Development (AFESD)<sup>5</sup> identified ten MENA energy connectivity projects, which it estimated could save 127 billion US dollars in lower energy costs and avoidance of duplicate investments. These included seven electricity links costing a total of 3 billion US dollars: Libya-Egypt, Yemen-Saudi Arabia-Egypt-Jordan, and Kuwait-Iraq. Three gas import projects, costing 2.8 billion US dollars, were from Iraq to Kuwait, Libya to Egypt and the Bahrain LNG import terminal. The World Bank has estimated that electricity trade could save the Arab countries 17-25 billion US dollars and 33 GW of required generation capacity. The GCC Interconnection Authority, responsible for the GCC electricity interconnections, states that electricity trade saved the GCC 400 million US dollars in 2016, with savings calculated to total 24 billion US dollars by 2038.<sup>6</sup>

Of the ten AFESD projects, the Bahrain LNG import terminal, the only one not involving a cross-border link, is intended to start operations soon. The Saudi-Egypt electricity link is under development,<sup>7</sup> a memorandum of understanding on the Saudi-Jordan electricity link was signed in November 2017,<sup>8</sup> and the Iraq-Kuwait gas pipeline might go ahead.<sup>9</sup> This limited progress, at a time of fiscal stringency

<sup>4</sup> Ebru Sengul, "Gulf Crisis Not to Affect Qatar's LNG and Oil Exports", in *Anadolu Agency*, 7 June 2017, <http://v.aa.com.tr/836343>.

<sup>5</sup> AFESD is a Kuwait based pan-Arab development finance institution. All member-states of the Arab League are members of the AFESD.

<sup>6</sup> Arab Petroleum Investments Corporation (APICORP), "Electricity Trading in MENA – Huge Potential But Far Behind", in *APICORP Energy Research*, Vol. 3, No. 4 (January 2018), [http://www.apicorp-arabia.com/Research/EnergyResearch/2018/APICORP\\_Energy\\_Research\\_V03\\_N04\\_2018.pdf](http://www.apicorp-arabia.com/Research/EnergyResearch/2018/APICORP_Energy_Research_V03_N04_2018.pdf).

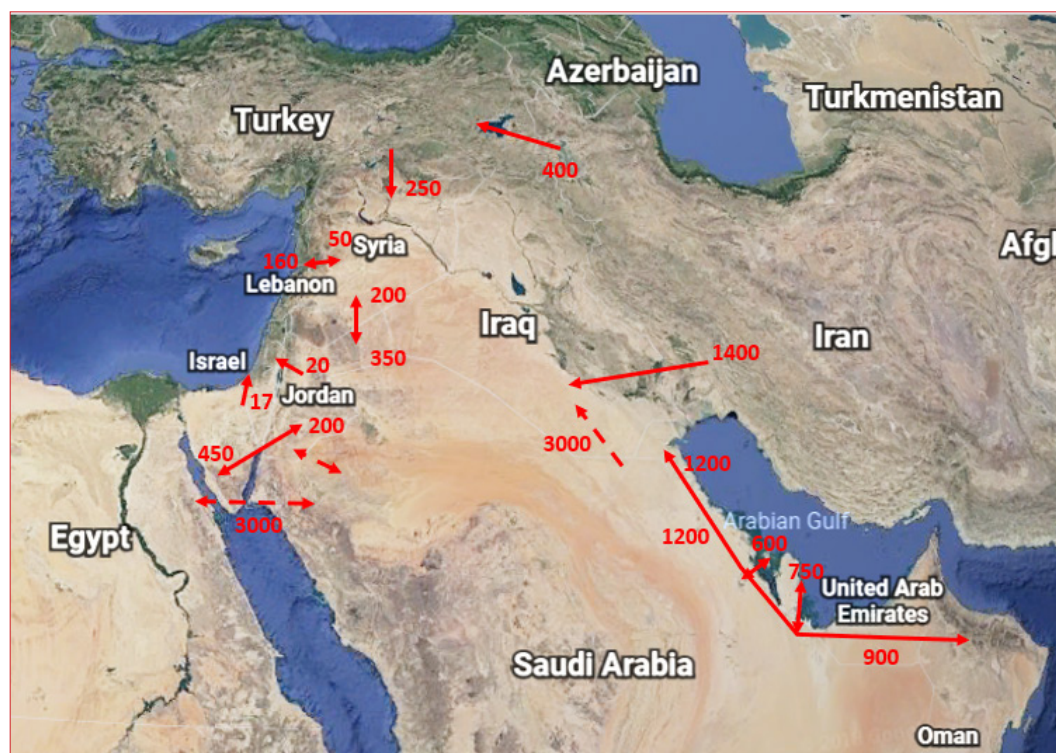
<sup>7</sup> Mohamed Farag, "Egypt, Saudi Arabia to Finalise Electricity Interconnection Project Procedures in March", in *Daily News Egypt*, 27 November 2018, <https://dailynewsegypt.com/?p=682256>.

<sup>8</sup> "Jordan, Saudi Arabia Sign Memo over Electricity Grid Connection Project", in *The Jordan Times*, 9 December 2017, <http://www.jordantimes.com/node/301253>.

<sup>9</sup> Rania El Gamal, Osamu Tsukimori and Dmitry Zhdannikov, "Exclusive: Iraq Looks to Kuwait Gas Pipeline to Pay off Reparations", in *Reuters*, 22 November 2017, <https://reut.rs/2zYKGxS>.

and reforms to subsidies that should prioritize access to lower-cost energy, and saving unnecessary capital spending, is indicative of the problems such projects face.

**Figure 1** | Middle East electricity interconnections (capacity in MW; planned connections dashed)



Source: APICORP, "Electricity Trading in MENA", cit.; Qamar Energy research.

### 1.2 The Gulf

The Gulf Cooperation Council, founded in 1981 and grouping Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates, was for a long time the most effective regional cooperation organization. However, it has been hindered by political suspicions and disputes between its members. This shows most clearly in the arena of gas.

Qatar, with ownership of the majority of the world's largest gas field, North Field (South Pars in Iran), long had ambitions to expand gas exports to its neighbours by pipeline. But planned exports to Bahrain, just a few kilometres away, and Kuwait have been blocked by Saudi Arabia, which does not want Qatar to gain too much influence within the GCC.<sup>10</sup> Dolphin Energy, a subsidiary of Abu Dhabi's Mubadala strategic investment company, has been able to go ahead with the construction

<sup>10</sup> Middle East Institute, *The Energy Implications of the Gulf Crisis*, 12 July 2018, <https://www.mei.edu/publications/energy-implications-gulf-crisis>.

of the Dolphin pipeline to the UAE and Oman, with 20 billion cubic metres (bcm) annual capacity. Even in this case, Saudi Arabia has made some protest over the pipeline route.

In June 2017, Saudi Arabia, the UAE and Bahrain, joined by a number of other Arab countries, imposed a boycott on Qatar over alleged support for terrorism, its alignment with the Muslim Brotherhood, and its purportedly too close relationship with Iran, (and for defying the Saudi-UAE's line of isolating Iran). Dolphin has continued operating as normal despite the GCC rift. However, plans to expand it to its full 30 BCM capacity now appear unlikely to go ahead.

Iran, holder of a smaller part of the field, possesses the world's second-largest gas reserves after Russia,<sup>11</sup> and is the third-largest gas producer. Nevertheless, political and commercial problems, internal policy disagreements, unrealistic expectations and sanctions have repeatedly prevented it from becoming a gas exporter to its GCC neighbours, despite repeated discussions.<sup>12</sup> The most advanced project, to the UAE emirate of Sharjah, did not go ahead as planned in 2005 over the non-readiness of the required pipeline. Discussions with Oman more recently have also not led to an agreement. However, Iran is an important exporter to Turkey and in June 2017 started exporting gas to Iraq, a political ally. It also sends electricity to Iraq.

Meanwhile Iraq, which flares large amounts of gas associated with oil production as it is unable to capture and use it, suffers from extensive electricity shortages. It has discussed gas exports to neighbouring Kuwait to replace expensive oil or LNG, but so far no deal appears to have been struck, due to lack of agreement over price.

The six GCC countries are linked by an electricity grid. This supports limited amounts of electricity transfers (shown in Figure 1), currently on a bilateral or barter rather than true market basis. It saves on emergency reserves but is not used for real electricity trade. However, development of such a market would allow for sharing renewable electricity across the region. Sunset falls at different times, particularly between the Gulf and western Saudi Arabia, allowing the more westerly areas to generate solar power for those in the east. States relatively more advanced in installing solar power may come to have daytime surpluses which could be exported to lagging neighbours.

Saudi Arabia is also building a 3 GW interconnection to Egypt, with interconnections to Jordan and Iraq (3 GW) under consideration. Finally, Saudi Arabia exports oil to its ally Bahrain's refinery, via a recently-expanded pipeline.

<sup>11</sup> BP, *BP Statistical Review of World Energy 2018*, cit.

<sup>12</sup> Maximilian Kuhn, *Enabling the Iranian Gas Export Options. The Destiny of Iranian Energy Relations in a Tripolar Struggle over Energy Security and Geopolitics*, Berlin, SpringerVS, 2013; David Ramin Jalilvand, "Iran's Gas Exports: Can Past Failure Become Future Success?", in *OIES Papers*, No. NG 78 (June 2013), <https://www.oxfordenergy.org/?p=27478>.

## 1.3 Iraq and its neighbours

Iraq imports gas from Iran, exports oil via Turkey, and may commence gas exports to Turkey, gas exports to Kuwait, and oil and gas exports to/via Jordan, through new pipelines. Historically, Iraq has exported oil through pipelines in Syria, but this has been shut down since it was invaded by the US in 2003, and looks unlikely to resume given the continuing Syrian civil war.

Iraq's own internal dysfunction is a reason for some of these imports, and a barrier to the realisation of its export plans. With insufficient levels of gas processing and power generation, Iraq has to import gas and electricity from Iran, and even then falls short of meeting demand. The intended pipeline through Jordan to the Red Sea port of Aqaba has been held up by insecurity in western Iraq. Planned gas exports to Turkey from large fields found in the autonomous Kurdistan region have progressed only slowly over issues with financing and sales agreements. The US has worked hard to encourage reconciliation between Baghdad and Erbil over energy issues, particularly resuming federal oil exports through the Kurdish pipeline to Turkey. The September 2017 agreement for Russia's state firm Rosneft to develop a gas pipeline<sup>13</sup> has brought in a heavyweight partner, but one with its own political baggage and strategic objectives.

Turkey is a special case because it is linked to the world beyond the Middle East in energy trade. It receives gas from Russia and Azerbaijan (as well as LNG imports), and sends a limited amount to Greece. This is set to increase when the Trans-Anatolian Pipeline (TANAP), carrying Azeri gas to and through Turkey, links up to the Trans-Adriatic Pipeline (TAP), to connect to Greece, Albania and Italy. As discussed below, Turkey also has a potential role as market and transit route for East Mediterranean gas. Turkey's vital role stems from its large economy (it is, for instance, the fourth-largest gas consumer in Europe), and its geography as a bridge between the Caucasus and Black Sea and the Mediterranean, and between the Middle East and Europe.

Meanwhile, apart from exporting gas to Turkey, Iraq and small volumes to the Caucasus, Iran's ambitious gas export plans have failed to materialize. Like Turkey, it enjoys a pivotal geography: in its case, connecting the Caspian, the Persian Gulf and landlocked Afghanistan and Central Asia. But US sanctions, Iran's internal consumption and its unrealistic commercial expectations have prevented it from developing planned gas pipelines to its GCC neighbours (Sharjah and Oman being the most advanced projects, but both look unlikely to proceed further for now) and Pakistan. Iran's gas exports to Turkey have been frequently interrupted by winter shortages and by disputes over pricing, making Tehran appear to be an unreliable supplier (similarly, it cut off gas and electricity supplies to Iraq in summer 2018 over alleged unpaid bills, when suffering from shortages itself during a heatwave,

<sup>13</sup> Dmitry Zhdannikov, "Russia's Rosneft Clinches Gas Pipeline Deal with Iraq's Kurdistan", in *Reuters*, 18 September 2017, <https://reut.rs/2xKy1hi>.

triggering widespread protests across southern Iraq).

### 1.4 The Levant

Finally, in the Levant (East Mediterranean), Egypt used to send gas to Jordan, Syria and Lebanon; Israel is exporting gas to Jordan and is in discussion to sell to or at least via Egypt, Egypt may resume supplies, and Cyprus may also join in.

Developments in this region have been driven by the vagaries of resource discoveries and politics. Egypt has swung from being a gas exporter, with ambitions to expand the Arab Gas Pipeline, through Jordan to Syria and Lebanon, on to Turkey, to being a large gas importer as new developments failed to keep pace with depleting legacy fields. The pipeline through Sinai to Israel and Jordan was also repeatedly sabotaged by insurgent groups following the 2011 revolution. The Egypt-Israel pipeline attracted allegations of corruption, and subsequent arbitration over Egypt's failure to make contracted deliveries. But the development of the giant offshore Zohr find, near the border with Cyprus, has returned the country to being at least a modest net exporter.

Israel has tepid relations with Jordan and Egypt, and no diplomatic relations with Syria or Lebanon. After making large offshore gas discoveries in 2009-10, Israel was initially slow in moving ahead with export plans because of desires to retain gas for domestic use, and disputes over taxes and corporate monopoly positions. Eventually, though, the companies active in Israel, particularly the US's Noble Energy, moved ahead on sales to Jordan.

Border demarcation has also been problematic. Israel and Lebanon have an ongoing dispute over their maritime border, which runs close to Israel's Karish gas-field, and Lebanon's Block 9 which was awarded to a consortium of Total, Italy's Eni and Russia's Novatek in February 2018.<sup>14</sup> Turkey does not recognize the Republic of Cyprus, favouring the Turkish Republic of Northern Cyprus, which is not recognized by any other country. In February 2018, Turkish naval vessels prevented a drill-ship hired by Eni from drilling in Cypriot waters.<sup>15</sup>

The combination of these factors means there is no straightforward way for the gas discovered off Israel and Cyprus to get to the largest regional market, Turkey, or from there to Europe. A proposed 10-20 BCM subsea pipeline to Greece and Italy, which would also carry Cypriot gas, has been costed at 7-8 billion US dollars.<sup>16</sup> This

<sup>14</sup> Lisa Barrington, "Lebanon to Begin Offshore Energy Search in Block Disputed by Israel", in *Reuters*, 9 February 2018, <https://reut.rs/2BT9uZk>.

<sup>15</sup> Stephen Jewkes and Jane Merriman, "Turkish Blockade of Ship off Cyprus Is out of Eni's Control: CEO", in *Reuters*, 16 February, 2018, <https://reut.rs/2EHMwFH>.

<sup>16</sup> "Israel Reportedly Closes \$8b Gas Pipeline Deal with Greece, Cyprus and Italy", in *i24News*, 25 November 2018, <https://www.i24news.tv/en/news/international/europe/189474-181125-israel-reportedly-closes-8b-gas-pipeline-deal-with-greece-cyprus-and-italy>.



amount seems surprisingly low, but if accurate, this route could be viable.

In the absence of such a link, the easiest route to market is to send the gas to Egypt, from where it can be liquefied in the country's two under-utilised LNG plants and re-exported. The US has strongly promoted such projects, hoping that gas could be a force for regional peace and economic integration of Israel with its Arab neighbours. However, examples both here and elsewhere suggest that pipelines follow peace, not the other way around. Expensive commitments to physical infrastructure, backed up by enforceable contracts, are difficult to make when the political foundations are shaky.

As Figure 1 shows, the Levant also has a number of electricity connections, but these have very limited capacity and the ones through Syria have been interrupted by the civil war. Saudi Arabia or (less likely) Iraq would be the geographic conduit for a link between the grids of the Levant and Gulf.

## 2. Opportunities and challenges for further cooperation

### 2.1 Oil and gas

In oil, a number of countries are pursuing projects intended to improve the security of their exports, in particular by reducing dependence on the Strait of Hormuz.<sup>17</sup> China is involved in some of these, as discussed below, but others, such as Saudi Arabia's expansion of the Petrolina to its Red Sea coast, are purely national projects. Kuwait is partner in a large new refinery at Oman's south-eastern port of Duqm, which along with a planned large oil storage park, could give Kuwait some additional export flexibility. Overall, given the status of most regional countries as oil exporters, there is limited room for cross-border cooperation other than some trade in refined products. However, national oil companies such as Saudi Aramco and ADNOC are working together on overseas downstream (refining and petrochemical) projects.

Future scope for cooperation in gas is much wider. As noted, though some regional countries are large gas exporters while others have sizeable deficits, there ought to be scope for more pipeline connections. Gas prices are rising regionally as subsidies are withdrawn. The availability of floating import terminals, a relatively new technological development, which can be installed at offshore or port locations quickly and at moderate capital cost, and removed again if not needed a few years later, gives every Middle Eastern country the ability to access LNG, available from diverse suppliers, which partly reduces the urgency to secure pipeline gas. A pipeline has the disadvantages of being relatively easy to sabotage (as seen

<sup>17</sup> Robin Mills, "Risky Routes: Energy Transit in the Middle East", in *Brookings Doha Center Analysis Papers*, No. 17 (April 2016), <http://brook.gs/2bBNd4T>.

repeatedly in recent years in Sinai, Yemen and Iraq), and of tying the importer to a single supplier. However, pipeline gas can be significantly cheaper over moderate distances.

The East Mediterranean region appears most promising for pipeline cooperation. Efforts by the gas companies involved, with a degree of state support, has advanced pipeline connections between Israel, Cyprus, Egypt and Jordan. However, progress on other schemes appears unlikely given the lack of relations between Israel and Lebanon and Syria, and no prospective solution to the division of Cyprus.

The Iraq-Jordan and Iraq-Turkey and perhaps Iraq-Kuwait pipelines should go ahead eventually, but will require Iraq to develop much more domestic gas. Any further interconnection in the Gulf remains stalled by the Saudi/UAE confrontations with Qatar and Iran.

As carbon capture and storage develops, the question of cross-border carbon dioxide (CO<sub>2</sub>) pipelines may eventually arise. CO<sub>2</sub> can be used for enhanced oil recovery. The technical issues would be similar to those for gas, but the commercial and political sensitivity should be much less. Hydrogen might also emerge as an important energy carrier and storage medium, produced from natural gas and/or renewable-driven electrolysis. These are two aspects of regional energy interconnectivity that may develop in the future given further attention to climate change.

### *2.2 Electricity and renewables*

As noted, the current state of electricity interconnection is limited, but much greater than for gas. Development of further connections, and a commercial basis for trade, could eventually spur the emergence of a true regional electricity market. There are also ambitions for extra-regional electricity exports, for instance potentially from the UAE to the Indian subcontinent.

The UAE in particular has invested heavily in solar photovoltaic (PV) power generation as costs have fallen, achieving world-record low bid prices, and Oman, Saudi Arabia, Jordan and Egypt are also following. The very low prices achieved in the UAE and then Saudi Arabia have helped focus policymakers' attention, and given them a target to aim for, even in countries that have so far been slower to adopt solar. As solar penetration increases, countries will face challenges with excess generation at certain times (such as spring, when it is sunny but relatively cool) and a deficit in evening periods.

Solar power in the Middle East is well-matched to electricity demand patterns, which are driven by air-conditioning demand and are thus highest in summer daytime. There is also a substantial early evening peak in summer as air-conditioning requirements remain high and people returning home from work use power for TV, cooking and lighting, but at this time solar generation is declining or absent. Long-distance electricity transmission is one way to solve this challenge. In July,

around the peak electricity demand period, sunset in Dubai is around 15:12 GMT, in Riyadh is around 15:45, and in Cairo about 17:00. Thus solar electricity sent from more westerly locations could help increase the overall penetration of solar power in the region, saving on investment in potentially more expensive solutions such as batteries, concentrated solar thermal power, or gas-fired backup.

This kind of electricity trading would require countries to be more comfortable relying on their neighbours for critical supplies. With the exception of some close allies, this in turn would need external guarantors or more robust institutions, as discussed below. However, cross-border investment in renewables is rising, with Masdar (Abu Dhabi), Fotowatio (owned by Saudi Arabia's ALJ) and Acwa Power (Saudi Arabia) bidding actively for utility-scale solar and other projects across the region. The role of specific research and development (R&D) for regional conditions, demonstration projects, and standard models for renewable Independent Power Producer (IPP) projects, can be important in accelerating progress in new entrants.

### 3. The political, geopolitical and socioeconomic drivers

#### 3.1 Institutions and politics

From the preceding discussion, it should be clear that the main barriers to energy interconnectivity within the Middle East are not technical, economic or financial. Even the commercial barriers, in the shape of low, subsidised energy prices, have been falling in recent years. The blockers are political and institutional, instead.

Some regional conflicts appear intractable and as such pose nearly insurmountable long-term obstacles. There is no prospect for a Lebanese/Syrian-Israeli peace, in the absence of a huge regional political shift. The Saudi-UAE/Qatar crisis may be resolved but its legacy of distrust will make it unlikely that either country would want to rely on Doha for energy supplies in future, beyond the existing Dolphin pipeline. Deals from Iran to its GCC neighbours could be possible if the political temperature cooled off, but likely only for relatively non-critical supplies of electricity or gas.

Expanding regional energy trade, particularly via hard infrastructure, depends on concurrent progress in improving political relations and confidence. Regional organisations, such as the Arab League or GCC, or those including important regional states and dealing with energy, such as OPEC or the Gas-Exporting Countries Forum, have not managed to establish an institutional personality above their constituent members. Even countries with normal relations, such as Iran and Turkey, and allies, such as Iran and Iraq, and Egypt and Jordan, have seen energy trade interrupted when the exporter's domestic market ran short. Mutual interdependence and bilateral or multilateral direct investment can raise the stakes of disputes and so encourage cooperation. Such deals could include, for instance, gas for electricity swaps between Iraq and Turkey or Iraq and Kuwait.

Multilateral systems, such as that emerging in the East Mediterranean, are much more complicated to put together than bilateral deals, but may be more robust. It helps if they do not have a single point of failure vulnerable to a political squabble, sabotage or a domestic energy shortage in one country. International financial institutions, even if not widely trusted, or powerful external actors – the US, China, Russia and perhaps the EU – can be helpful in mediating and guaranteeing multilateral projects. But the concern will remain that external actors' approaches are politicised and intended to serve their own national aims; or that their moves will be opposed by geopolitical rivals.

Alongside better political relations, sustained attention from policymakers is also required, given the centralised decision-making in most regional countries, and the likelihood that state-controlled energy firms will be leaders in most projects. At a more mundane but vital level, technical standards for interconnections and operations are required. Development of regional markets and benchmarks for electricity and gas prices reduce the requirement to agree everything on a bilateral basis. With certain suitable projects, international energy companies can bring the technical and organisational skills to drive them forward.

### *3.2 The wider context: the BRI and other players*

China's Belt and Road Initiative (BRI) emphasises connectivity, including of energy, through Eurasia and the Indian Ocean. The Middle East is a potentially central part of this, though so far it has not fully realized this opportunity.<sup>18</sup> The crucial factor in realising most of the missing energy linkages within the Middle East is not capital or access to technology or project management, unlike some BRI countries. Rather, as argued above, it is generally an issue of political alignment. This is where China may be able to play a role, as a heavyweight outside political player, that might be able to draw countries into agreement.

Relevant regional Chinese investments include particularly three that involve bypassing the vulnerable Strait of Hormuz for oil exports: Oman's new Duqm port, which offers as noted oil storage and export, its 31 million US dollar investment in 2015 in Iran's Jask port, intended eventually to have an oil pipeline and storage; and its construction of the UAE's Habshan-Fujairah oil pipeline. Other energy connectivity projects that may interest China include the planned development of an oil and gas hub around Suez, and Iraq's Basra-Aqaba pipeline, another way to bypass Hormuz. Given regional countries' unwillingness to be dependent on a neighbour for their vital oil exports, Chinese involvement could act as a guarantee.

The US's ability to threaten Beijing with a cut-off of oil exports from the Middle East means the Middle Kingdom has a reason to be more involved in the Gulf and Red Sea region in future. So far, Chinese involvement in the region has been largely by

<sup>18</sup> Robin Mills et al., "China's Road to the Gulf: Opportunities for the GCC in the Belt and Road Initiative", in *Emerge85 Insights*, October 2017, <https://emerge85.io/?p=8050>.

trade, and more recently as an investor in large-scale energy and other projects, particularly in Iraq, Iran and the UAE. It can be expected that this growth will continue, and that it will draw China into deeper diplomatic and security/military involvement. So far China has maintained a fair neutrality on the region's conflicts, such as between Iran and its Gulf Arab neighbours. In future, such neutrality may become untenable, and regional states may also be drawn into taking sides between China or the US, or become embroiled in frictions with other countries concerned at Chinese influence in the Gulf, such as India. Sponsoring mutually-beneficial inter-regional energy connections would be one way for China to continue to play all sides. But, as discussed further below, such projects can only go ahead where there is already a reasonable basis of mutual engagement.

China is not the only outside player of importance. For instance, in the Kurdistan region of Iraq, Russian state firm Rosneft has taken ownership of the oil export pipeline and the rights to build a gas pipeline to Turkey. Russia has its own complicated political and commercial calculations in this move, as with its increasingly deep engagements with Turkey, Iran and Egypt (in nuclear power), and Saudi Arabia, Qatar and the UAE (in OPEC and in outward-bound energy investments). The regional powers Turkey, Iran, Saudi Arabia and Egypt all have their own roles in advancing and frustrating various energy connections, and managing a complex set of external relations. India, Japan, South Korea and the EU (both as an organization and the individual member states, notably France, Germany, the UK and Italy) are also involved in a wide variety of regional energy investments and trade. This further complicates and politicises Middle East coordination in energy projects, as contrasted to the 1980s and 1990s when Western influence in the region faced much less challenge and competition.

### Conclusions

Despite growing Middle East domestic energy demand, a shortage of low-cost oil and gas resources in some countries, and a surplus elsewhere, intra-regional energy trade has been slow to develop. Limited electricity interconnections have been built but are not used systematically. Regional gas pipelines are even rarer and have suffered many political and security-related problems. Instead, countries have turned to LNG imports, which can be obtained from a diverse international market. The security of oil transit and exports is, again, a concern but most countries have sought to address these purely at a national level.

Commercial conditions for gas and electricity trade have historically been unfavourable, particularly because of low, regulated gas and electricity prices in most regional countries, and a lack of suitable price benchmarks. This has made intra-regional energy exports less attractive than those to more distant markets in Europe and Asia. However, with reductions of subsidies in many countries, and the emergence of a more globalised LNG business that provides an upper limit on gas prices, the commercial framework has been improving. Key commercial factors

that would boost further the prospects for regional energy trade include:

- removal of remaining subsidies and price reform, either market-set or at least based on a suitable regional benchmark (e.g. delivered LNG prices in the Gulf or to Egypt);
- development of the key interconnections mentioned in section 2.1, and other nodes, including LNG import terminal(s) into Lebanon, boosting east-west Saudi electricity transmission, and resolving pipeline constraints between Egypt, Israel and Jordan;
- clear procedures for third-party access to gas pipelines and LNG import terminals;
- permission for large users to contract directly for gas supplies (as introduced in Egypt recently); and
- establishment of a genuine trading mechanism for international electricity, initially through the GCC interconnection.

This lack of energy integration is now more a symptom of political disputes, concerns over supply security, and a lack of effective multinational regional organisations. Though large-scale bilateral or multilateral projects can help in confidence-building, they are too expensive and vulnerable to be an effective driver for peace-making. Instead, they have to follow political reconciliation. Peace between Egypt and Israel and between Jordan and Israel has allowed them to cooperate. Saudi Arabia's outreach to Iraq over the past year or so has also improved the prospects for electricity trade. Otherwise, the region continues to be beset by conflicts, which will essentially prevent new large-scale energy trade until at least the contending parties reach a stable *modus vivendi*. Powerful external actors, particularly the US, more recently Russia, and perhaps in the future China, can help push cross-border projects forward, but they need to concentrate less on deal-making and physical infrastructure, more on trust and institutional and market mechanisms to allow the countries concerned and private companies to deliver specific projects. An effective role for markets, international energy firms and strong governing institutions can normalise cross-border energy infrastructure, reducing the continuing dependence on bilateral deal-making and political interference. International arbitration, which has been resorted to in disputes over Egypt's gas exports (both LNG and the pipeline to Israel), the Iranian pipeline to Sharjah, and gas exports from Iran to Turkey, does help give investors some confidence in a backstop should things go wrong.

Both Egypt and Turkey have advanced ambitions to be regional gas/energy hubs. In Egypt's case, this would be centred on the combination between the Suez Canal and the East Med assets, and in Turkey's, on its access to gas from numerous sources and onward export to Europe. But the concept of a hub, as opposed to simply a transit state or fee-seeking intermediary, is dependent on factors including regional trust, sufficient diversity of import and export options, and transparent, traded price benchmarks.

The emergence of large-scale renewable energy in the region heightens the potential advantage of electricity interconnections. It is likely that, initially, this will drive more case-by-case bilateral deals, rather than visionary intra-regional initiatives, but eventually large-scale solar surpluses and deficits may force more attention on grid integration. At the same time, the globalisation of the natural gas business, while making LNG widely available, also highlights the fuel's true economic value, well above the region's traditional regulated levels. More energy integration is essential to guarantee the reliability of the Middle East's energy exports; ensure the optimal use of gas resources; and use the region's tremendous solar potential to meet its economic and environmental goals.

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