Energy trade in the MENA region: Looking beyond the Pan-Arab electricity market

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ABSTRACT

This article contributes to the debate on energy security within the Middle East and North Africa (MENA) region by highlighting various aspects of the energy sector, specifically electricity and gas, which are relevant to the discussion on regional integration and their convergence with sustainable development. Development is not possible without energy and sustainable development is not possible without sustainable energy. The article discusses energy sustainability through the trading system and proposes regional trade agreements as means to further enhance peace and the energy security agenda of the region. The article makes the case that, to achieve security of energy supply, two main factors are important: diversification to minimize risk and regional cooperation. It is suggested that the MENA region should reduce or eliminate the technical barriers to energy trade. The article concludes with some recommendations on how to move forward.

1. INTRODUCTION

In an era where regional blocs are gaining greater prominence in the international political climate, the Middle East and North Africa (MENA) region is undoubtedly one of the remarkable regions in the world today. While many view the region with a degree of cynicism, given its wide-spread religious tensions and not-so-stellar human rights reputation, the fact remains that sections of MENA are among the world’s wealthiest regions in per capita terms and, despite the recent political instability and decline in global crude prices, the region is poised for further socio-economic growth. A natural corollary of such socio-economic growth is a greater demand for energy to meet both domestic and industrial needs. Needless to say, governments within the region have recognized the need to avert a potential energy supply crisis which might threaten the positive economic outlook of the region. To this end, countries within the region are looking to harness the potential of electricity and gas trade within the MENA region. It is in this vein that the countries within the region have teamed up, largely through the efforts of the League of Arab States (LAS) and under the auspices of the World Bank, to attempt to create a Pan-Arab Electricity Market (PAEM).

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This article provides an analysis of the ongoing efforts at promoting Pan-Arab energy trade by highlighting the role and benefits of promoting intra-regional trade in electricity and gas, with a view to improving energy security in the MENA region, which is fundamental for the development of any country. In fact, modern energy access is a human right. The article highlights the importance of regional cooperation in energy in MENA and makes the case for a bottom-up approach: enhanced cooperation in the short term before eventual regional integration in the longer term. Such regional cooperation should be beneficial for every party involved in MENA, without paternalizing. Special importance is given to the link between suppliers, transit countries and consumers of electricity and gas.

The PAEM is envisioned as a shared vision to increase power trade in the region and potentially export power to the European electricity market. Despite having signed a Memorandum of Understanding (MoU) committing to the establishment of the PAEM,1 several national and regional actions and steps are required to ensure a successful implementation and optimization of the integration program. It is therefore important to scale up the momentum for building political support to further deepen and widen trust in regional cooperation. The article acknowledges the challenge of speeding up political buy-in for gas trade and highlights the complexity of its nature due to the lack of recognized regional champions.

Further, the proposed integration plan under the PAEM only seeks to achieve progressive regional integration of electricity production. It, however, fails to provide for trade in gas, which, arguably, has the potential to address the region’s energy supply needs. A trade-oriented approach to the regional-integration efforts would go a long way to facilitate the achievements of the PAEM, while ensuring the sustainability of energy provision within the region. This article makes the point that market liberalization is a pre-requisite for market integration and that, with the exception of movement of labour, trade and other economic linkages have remained weak in MENA.

Despite the lack of consensus on the exact extent of the geo-political area referred to as MENA, it is generally accepted that the region covers the area between Morocco in northwest Africa, Iran in southwest Asia and Sudan in northeast Africa. The World Bank recognizes Algeria, Bahrain, Djibouti, Egypt, Iran, Israel, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates (UAE), Palestine and Yemen as the constituent countries of the region.2 While other commentators sometimes include Ethiopia, Mauritania, Sudan and Turkey in this list.3 Although the countries of MENA or ‘the region’ refer to Algeria, Bahrain, Djibouti, Egypt, Iran, Israel, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, UAE, Palestine and Yemen, for the purposes of this article, the two non-Arabic-speaking countries, namely Iran and Israel, are not included in the analysis.

In recent years, the region has been devastated by civil wars in Syria, Iraq, Libya and Yemen. This has resulted in loss of human lives, damage to physical infrastructure and a refugee crisis that have threatened the economic potential of the region. The United Nations High Commissioner for Refugees (UNHCR) reports that approximately five million Syrian refugees have fled to various parts of the MENA region, including Egypt, Iraq, Jordan, Lebanon and Turkey.4 The oil-rich countries within the region have also had to grapple with low oil prices, youth unemployment and largely undiversified economies. Consequently, these challenges have become an immutable consideration for policy in, and in respect of the region.

Despite these challenges, the region holds enormous potential both for economic growth and political cooperation. Indeed, cooperation within the region could, arguably, be the most promising avenue for

1 Saudi Arabia Signs MOU to Establish Arab Market for Electricity (Asharq Al-Awsat English – April 6, 2017) <http://english.aawsat.com/asharq-al-awsat-english/business/saudi-arabia-signs-mou-establish-arab-market-electricity> accessed 13 April 2017.
2 The World Bank, Regional Overview MENA, <http://www.worldbank.org/en/region/mena> accessed 7 April 2017.
3 Middle East and North Africa—MENA (Investopedia), <http://www.investopedia.com/terms/l/lion-economies.asp> accessed 7 April 2017; OECD-MENA Ministerial Conference 2016; United Nations, Office of the High Commissioner for Human Rights, Mena Region Index, <http://www.ohchr.org/EN/Countries/MENARegion/Pages/MenaRegionIndex.aspx> accessed 7 April 2017.
4 Syria Regional Refugee Response – United Nations High Commissioner for Refugees (UNHCR), <http://data.unhcr.org/syrianrefugees/regional.php> accessed 17 May 2017.
addressing the challenges in the region. It is indeed surprising that the MENA region has not been able to capitalize on its wealth and power position stemming from oil and gas to become a strong regional trading bloc. This potential, in turn, may be the key to overcoming the hurdles to cooperation, especially if one takes into account that the Arab countries of the MENA regions share the same language, culture, religion and history.

Section 2 of this article contributes to the debate on energy security within the MENA region by highlighting various aspects of the energy sector, specifically electricity and gas, which are relevant to the discussion on regional integration. It outlines current and future efforts at developing these markets within the region. Section 3 discusses energy sustainability through the trading system, whereas Section 4 proposes regional trade agreements as means to further enhance peace and the energy security agenda of the region. The article makes the case that, to achieve security of energy supply, two main factors are important: diversification to minimize risk and regional cooperation. It is suggested that the MENA region should reduce or eliminate the technical barriers to energy trade. Section 5 concludes the article with some suggestions on how to move forward.

2. ENERGY TRADE SITUATION IN THE MIDDLE EAST AND NORTH AFRICA

Regional electricity trade

Engaging in electricity trade is beneficial for countries, but very little is actually traded (see Table 1 of the Annex). This section provides an overview of electricity trade and an analysis of future trends.

Initiatives overview

Parts of the MENA region have experienced a spurt in economic growth in recent years. Attendant with this level of economic activity has been a growing demand for energy, which has outstripped current supply levels. It is a well-known fact that when there is less demand, there is more supply. Figure 1, however, shows that demand in the region is expected to double by 2020, requiring the provision of additional generation capacity. Growing energy consumption, both by industry and households, necessitates a plethora of measures to ensure sustainable provision of energy to meet every day needs. Attempts to address this problem have included increased conservation policies and tariff adjustments. However, it is axiomatic to say that the solution to the problem lies in expanding generation capacity and supply of energy in an environmentally sound and sustainable manner.

This situation has proven to be a challenge for most countries in the region. Despite oil and gas reserves, domestic production of electricity in Jordan, Saudi Arabia, Kuwait, the UAE, and others has in recent years
proven a challenge in meeting the needs of their respective power sectors.\(^5\) This reality has resulted in the need to import both gas and electricity to augment domestic supply. This has, in turn, required the need to construct cross-border infrastructure to facilitate international trade. However, these facilities have proven insufficient to promote the required level of trade to address the energy challenge within the region.

In addition, in recognition of the benefits of regional cooperation, several bilateral and sub-regional initiatives have been adopted to enable countries within the region to exchange and trade in electricity. These include:

a. The Maghreb regional interconnection, which includes Morocco, Algeria and Tunisia, and which was initiated in the 1950s and evolved into multiple high-voltage transmission interconnections between the three countries. Morocco was connected to Spain in the late 1990s, and Morocco, Algeria and Tunisia are now all synchronized with the pan-European high-voltage transmission network.

b. The eight-country regional interconnection (Egypt, Iraq, Jordan, Libya, Lebanon, Palestine, Syria and Turkey [EIJLLPST]), which was initiated in 1988 by Egypt, Iraq, Jordan, Syria and Turkey as part of an effort to upgrade their electricity systems to a regional standard.\(^6\) Lebanon, Libya and the Palestinian Authority later extended the agreement to eight countries.\(^7\) Turkey has been fully synchronized to the European grid since 2012, which further efforts to standardize the EIJLLPST electricity network with the grids in Turkey and Europe.

c. The regional power interconnection of the Gulf Cooperation Council (GCC) allows electricity exchange among its six Member States—Kuwait, Saudi Arabia, Bahrain, Qatar, the UAE, and Oman—under an agreement signed in 2009. The interconnection is targeted at sharing capacity reserve and improving supply reliability to reduce the need for investment in new generation investment costs in capacity. The GCC Member States established an Interconnection Authority (GCCIA) in 2001 and signed a power exchange and trading agreement in 2009. The GCCIA is the most advanced in institutionalizing regional cooperation among all the MENA sub-regions. It has a clear legal and institutional framework with a 12-member Board from each GCC member country and a chief executive officer who oversees four operational divisions: system operations and maintenance, engineering and planning, finance and accounting, and support services. Recently, more focus has been given to accelerating electricity exchange and trade.

d. Saudi Arabia-Egypt new asynchronous interconnection (HVDC, 3000MW). Project implementation is well underway, with commercial operation scheduled in 2017/2018. There are also plans to construct interconnections between Saudi Arabia and Jordan, and between Saudi Arabia and Yemen.

**Future Trends**

Following various research studies undertaken both by the LAS and the World Bank, it became clear that energy supply in the MENA region would benefit immensely from a fully integrated electricity grid. The PAEM is a result of efforts at improving the interdependencies of electricity systems in the region. It is hoped that it will enable countries within the Region exploit their electricity trade potential and eventually expand to the European and Asian markets.

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\(^5\) The World Bank, *Middle East and North Africa Integration of Electricity Networks in the Arab World Regional Market Structure and Design* (Report No: ACS7124, December 2013) 12.

\(^6\) Although the EIJLLPST Interconnection Agreement was signed in the 1980s, physical interconnections between Syria and Jordan and between Syria and Lebanon were constructed in the 1970s.

\(^7\) According to the Minutes of the Eighteenth Annual Meeting of Medelec, the EIJLLPST interconnection will be renamed the Electrical Interconnection of Three Continents (EITC) at the next ministerial meeting.
The PAEM envisages a four-stage transitional plan towards the ultimate goal of regional market integration. It is hoped that the phased approach to regional integration would give countries enough time to address any obstacles, and mitigate any risks that might impinge the integration effort. The first stage would focus on existing interconnections with the view to improving their infrastructure and increasing trade opportunities in the existing sub-regional interconnections. The second stage would see the opening of access to the market to wholesalers and large consumers who are connected to the transmission system, both of whom are important players to make the market work. This would improve competitiveness in the electricity market and improve on sustainability and supply security. The third stage would be the introduction of full wholesale competition in the three sub-regional markets. This will enable full participation of distributors, suppliers and large customers in the markets and thereby improve the efficiency, economy and transparency of the market. The final stage will see a fully functional, interconnected and synchronized regional market, complete with governing institutions and rules.

REGIONAL GAS TRADE

Initiatives overview

The MENA region has currently no shared vision for regional gas trade. This is fairly surprising given the promise of the region in terms of gas resources. Indeed, the MENA region holds 41 per cent of world gas reserves and is responsible for 20 per cent of world gas production. However, only 10 per cent of the MENA exported gas is traded within the region. The main reason why MENA nations export much-needed gas to the outside world, rather than within the region itself, lies on the energy-price subsidies in several of these countries. Fuel-price subsidies bring about price distortions, inflate domestic demand and hinder investment in trading opportunities. In view of the rapidly rising demand for gas, together with the abundant export surpluses (eg Qatar and Algeria) and increasing demand displayed by several countries, there is a case to be made for the promotion of cross-border gas trade in the MENA region. Other reasons that explain why MENA nations export gas to the outside world include: geopolitics (eg, the Dolphin Gas pipeline project not reaching Bahrain and Kuwait); rivalry behaviour (eg, between Saudi and Qatar, or Egypt and Qatar), and lack of trust in the security of supply from neighbours (eg, the Arab Gas Pipeline project and an increasing use of liquefied natural gas (LNG)).

Liquefied natural gas in the MENA region

Even though the MENA region is endowed with tremendous gas reserves, production has failed to quench demand growth. The ‘thirst’ for natural gas motivates the exploration of alternative ways to access supplies other than through existing pipelines in the region. In this context, LNG emerges as a suitable solution. Indeed, LNG presents the invaluable advantage of transport flexibility which allows its effective geographic diversification. This point is of vital significance in the light of the political convulsion that is sweeping the region. Indeed, geographically confined pipelines are more easily exposed to terrorist outbursts. Investing in

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8 The World Bank (n 5).
9 ibid.
10 ibid.
11 ibid.
12 World Bank, ‘Pan-Arab Regional Energy Trade Platform’, <https://www.ief.org/_resources/files/events/ief15-ministerial/world-bank-ief15-parallel-roundtable-2-presentation.pdf> accessed 8 November 2017.
13 World Bank, ‘Opportunities for Gas Trade in the MENA Region’, 4, <https://www.ief.org/_resources/files/events/5th-ief-igu-ministerial-gas-forum/alexander-huurdeman—session-2.pdf> accessed 8 November 2017.
14 G Brunekreeft and F Guliyev. ‘Gas Supply Security and the Competitiveness on the European Gas Market’ in CJ Jepma (ed), Gas Market Trading (Energy Delta Institute 2009) 103.
floating storage and regasification units (FRSU), as opposed to permanent LNG terminals, is also a further avenue worth exploring for countries that are bearing the brunt of the current crisis.

The MENA region counts with the world’s largest LNG exporter since 2006, namely Qatar. Qatar’s ascendancy on this energy source is striking to say the least. For instance, imports by consumer countries in the region amounted to 10.5 billion cubic meters (bcm) in 2015, 40 per cent of which were single-handedly supplied by Qatar. Indeed, the region is experiencing a pressing shortage of gas which has prompted several countries to seek LNG cargoes. Egypt and Jordan received their first LNG shipments in 2015; Kuwait and Bahrain are studying the construction of permanent import terminals; while the UAE is chartering FRSUs as a temporary and lower-cost solution, for instance.

LNG exports in countries such as Egypt, Oman, the UAE and Yemen have been decreasing or have stagnated altogether, while the region’s LNG imports have risen to meet domestic demand. One of the reasons for this increase lies in the limited level of regional pipeline gas trade. For example, the Dolphin Gas Pipeline project alone, through which Qatari gas is transported to the UAE and Oman, represents the majority of intra-Arab gas trade. While Qatar is the undisputed champion in the region, Iran could arguably also become a major LNG gas exporter in the medium or long term.

The case of Iran is truly singular, as it holds the second-largest proved natural gas reserves in the world, behind Russia. Yet, the country has been sorely lashed by war, political unrest and international sanctions to such an extent that it has been unable to harness its momentous energy wealth. Following the lifting of the sanctions in January 2016, Iran has made a promising resurgence, at least in terms of crude oil production. The question now is whether Iran can do the same with its natural gas output. Before the sanctions, Iran had lined up 6 LNG production facilities which were expected to export 95 bcm. However, these projects were cast aside as the sanctions regime proved to be an excessive burden for Iran to attract foreign investment.

This long-lasting political stand-off has also taken its toll on Iran’s energy infrastructure. Indeed, Iran is more likely to grant less priority to LNG ventures due to the high costs, technological gaps and cheaper pipeline alternatives. However, the fact remains that Iran has the potential to become a key gas supplier in the region once the adequate infrastructure is in place. Its swift economic recovery suggests that it could well decide to broaden its horizons by investing in LNG as a means to access alternative markets. For instance, Asia-Pacific markets such as China, India or Japan are particularly attractive as demand for LNG is unwaveringly high. These countries are the driving force for natural gas, even if LNG is still a minor form of natural gas. Such a development could arguably entail positive prospects for the MENA region as well. Indeed, as

15 US Energy Information Centre, ‘Qatar’, 12, <http://www.europarl.europa.eu/meetdocs/2009_2014/documents/darp/dv/darp20140213_04_en.pdf> accessed 8 November 2017.
16 Arab Investment Petroleum Corporation, ‘MENA: LNG’s Top Growth Target’, 1, <http://apicorp-arabia.com/Research/EnergyResearch/2016/APICORPEnergyResearch_V01_N09_2016.pdf> accessed 8 November 2017.
17 ibid 2.
18 Arab Investment Petroleum Corporation, ‘Competition Stiffens for MENA LNG Exporters’, 1 <http://apicorp-arabia.com/Research/EnergyResearch/2016/APICORPEnergyResearch_V02_N01_2016.pdf> accessed 8 November 2017.
19 ibid.
20 US Energy Information Administration, ‘Iran’, 1 <https://www.eia.gov/beta/international/analysis_includes/countries_long/Iraniran.pdf> accessed 8 November 2017.
21 R Leal-Arcas, J Alemany Rı´os, and C Grasso. ‘The European Union and its Energy Security Challenges’ 8 Journal of World Energy Law and Business 307, 2015.
22 BBC, ‘Iran Nuclear Deal: International Sanctions Lifted’ <http://www.bbc.co.uk/news/world-middle-east-35335078> accessed 8 November 2017.
23 See Arab Investment Petroleum Corporation, ‘Iran’s Impressive Return: More to Follow?’ 1 <http://www.apicorp-arabia.com/Research/EnergyResearch/2016/APICORPEnergyResearch_V02_N03_2016.pdf> accessed 8 November 2017.
24 Arab Investment Petroleum Corporation (n 18).
25 ibid 4.
26 Frost and Sullivan, ‘LNG Industry is Set FOR a Transformation in the Middle East’ LNG Industry Magazine, 5–8, 2015.
depicted in Figure 2, Iran could emerge as a major regional supplier in addition to the well-established Qatar, given the increasing role of LNG in energy security, bearing in mind that energy security for energy exporters means diversification of the energy market, whereas for energy importers it means diversification of energy supply.

Generally speaking, domestic supply in Algeria, Oman and the UAE is failing to keep pace with demand growth. Conflicts in Yemen are disrupting LNG production and resulting in power outages. Iran needs to renovate its ageing energy infrastructure. This state of affairs has led to a substantial amount liquefaction capacity being underutilized, especially in Algeria, Egypt, Oman and Yemen.27

In a nutshell, MENA countries are directing natural gas production for the domestic market while investing in import infrastructure and capacity. This is the easiest remedy to advance energy security under the prevailing circumstances. In view of the low spot LNG prices, several countries of the region have resorted to FRSUs as a quick fix before contemplating more expensive long-term solutions.28 Moving forward, it appears that Iran (arguably in the medium or long term) and Qatar are the best-placed MENA countries to provide LNG supplies within the region. Pushing for a Pan-Arab Gas Market (PAGM) with these two nations (even if Iran is not an Arab country) on board would set a promising framework for regional gas trade. The promotion of multilateral ventures within the region might constitute a way to secure more Qatari LNG supplies. Furthermore, such projects could cater for the required infrastructure to unlock Iran’s tremendous potential.

27 Arab Investment Petroleum Corporation (n 18) 4.
28 Arab Investment Petroleum Corporation (n 16) 3.
This section covers the Arab Gas Pipeline (AGP) project and the Dolphin Pipeline project, and analyses a couple of relevant agreements.

**ARAB GAS PIPELINE PROJECT**

An overview

The Arab Gas Pipeline (AGP) is a 1,200 km-long pipeline built at a cost of approximately USD 1.2bn. As Figure 3 depicts, it is a trans-regional gas export pipeline in the Middle East, built to carry natural gas from Egypt to Jordan, Syria and Lebanon. The AGP was commissioned in different phases. The first phase extends from Arish (Egypt) to Aqaba (Jordan). Its total length is 265 km, including a 15 km-long offshore segment running under the Gulf of Aqaba. The second section runs for 390 km from Aqaba to El Rehab (Jordan), 30 km from the Jordanian–Syrian border. The third section is 30 km in length, extending from El Rehab to Jabber (Syria). The fourth section expands from the Jordan–Syrian border to Homs (Syria) and constitutes a gas network in Syria.

The pipeline project was initiated within the framework of bilateral dialogues between Egypt and Jordan in 2001 to supply Jordan with natural gas through a pipeline from the northern Sinai town of El Arish to the

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29 This section draws largely from R Leal-Arcas, C Grasso and J Alemany Rios, *Energy Security, Trade and the EU: Regional and International Perspectives* (Edward Elgar Publishing 2016), 211–218.
30 See ‘Arab Gas Pipeline (AGP) Jordan, Syria, Lebanon, and Egypt’, *Hydrocarbons Technology* <http://www.hydrocarbons-technology.com/projects/arab-gas-pipeline-agp/> accessed 8 November 2017.
31 ibid.
32 Ministry of Petroleum of Egypt, ‘Arab Gas Pipeline’ <http://www.petroleum.gov.eg/en/ProjectsandActivities/StrategicProjects/Pages/GasPipeline.aspx> accessed 8 November 2017.
33 The third and fourth sections are not yet complete. The fourth pipeline runs from Jabber (Syrian side of Jordanian–Syrian border) to the Syrian–Turkish border, ending in Lebanon. It has four segments. Segment one runs from Jabber to Homs in Syria, while the second segment connects the cities of Homs and Aleppo in Syria. The third segment extends from Aleppo to the Syrian–Turkish border. The fourth segment connects Homs in Syria with Tripoli in Lebanon. See Arab Fund, ‘Linking the Gas Networks’, available at <http://www.arabfund.org/default.aspx?pageId=457> accessed 8 November 2017.
Jordanian city of Aqaba. The MoU later included Syria and Lebanon. Israel, Turkey and Iraq also signed deals to cooperate in this trans-regional pipeline project. The terms of the Egypt–Jordan Agreement are confidential. In 2004 Egypt, Jordan, Syria and Lebanon agreed to connect the existing pipeline with Iraq’s gas grid to allow Iraq to export gas to Europe.

Egypt considers the AGP a remarkable model for a strategic and economic artery between Egypt, Jordan and Syria and between Africa, Asia and Europe in future phases. However, the AGP has been the subject of attack several times since the start of the Arab revolution in early 2011 and, in recent years, gas pipeline attacks have become more frequent, affecting the AGP’s ability to deliver regular gas supplies. For instance, Jordan has suffered from a gas shortage and has looked into importing LNG as an alternative. In addition, regarding supply-demand balance in Egypt, it has led to a complete stop on gas export, both through the AGP and LNG. This default to supply gas is also a major contributor to the lack of trust in neighbours.

In the first half of 2014, Egypt, Jordan, Syria and Lebanon agreed to connect the existing pipeline with Iraq’s gas grid to allow Iraq to export gas to Europe. Accordingly, Iraq, Jordan and Egypt signed an MoU on oil and natural gas, which reactivated the AGP in Jordan and facilitated the construction of a double pipeline from Iraq to the port of Aqaba. The MoU produced two agreements. The first agreement concerns the reactivation of transmission of natural gas through the AGP. The second agreement was signed between Jordan and Iraq. It concerns a double pipeline: the first transmits crude oil from Iraq to the Gulf of Aqaba on the Red Sea; the second runs along the first pipeline, provides for linking the AGP project to import natural gas, and extends from Aqaba to the north of Jordan to supply power plants with natural gas. There has been discussion about the extent to which Jordan and Egypt benefit from the pipeline by transporting crude oil from Iraq to the Gulf of Aqaba on the Red Sea.

Despite the difficulties the AGP faces, it is still considered an important pipeline in the region. The AGP may also have future connections to the north, thereby reaching Europe. This is based on a 2006 MoU between Egypt, Syria, Jordan, Turkey, Lebanon and Romania to build an extension of the AGP from Syria to the Turkish border. The initial idea was that, from Turkey, the pipeline would be connected to the Nabucco

34 The Jordanian supply of gas from Egypt was interrupted in 2011. See ‘Jordan Loses $899 from Interrupted Egyptian Gas Supply’, Ahramonline, 20 July 2011 (<http://english.ahram.org.eg/NewsContent/3/12/16863/Business/Economy/Jordan-loses-m-from-interrupted-Egyptian-gas-supply.aspx>) accessed 8 November 2017.
35 Arab Gas Pipeline (AGP) (n 30); ‘Signing the Second Phase of the Arab Gas Pipeline Agreement’, Aljazeera.Net (25 January 2004) (<http://aljazeera.net/ebusiness/pages/9e304ac7-6e25-490e-b32b-1129c2f3162d>) accessed 8 November 2017 (in Arabic).
36 The Jordanian minister of energy said that the terms of the gas agreement with Egypt are ‘confidential’. See Bahraini newspaper Al Wasat, no 4138 (5 January 2014) (<http://www.alwasatnews.com/4138/news/read/844558/1.html>) accessed 8 November 2017; see also ‘Jordan: The Terms of Gas Agreement with Egypt are Confidential’, AlJazeera.Net (5 January 2014) (<http://www.aljazeera.net/ebusiness/pages/2b7657c4-9e40-46eb-a552-4d5ee0216bb5>) accessed 8 November 2017.
37 See (n 35).
38 Arab Republic of Egypt, Ministry of Petroleum, ‘Arab Gas Pipeline’ (<http://www.petroleum.gov.eg/en/ProjectsandActivities/StrategicProjects/Pages/GasPipeline.aspx>) accessed 8 November 2017.
39 ‘Blasts Rocks Egypt’s Gas Pipeline to Israel, Jordan’, Reuters (21 July 2012) (<http://www.reuters.com/article/2012/07/22/us-egypt-pipeline-idUSBRE6L0OT20120722>) accessed 8 November 2017; ‘New Attack on Egypt Gas Pipeline to Israel and Jordan’, BBC News (10 November 2011) (<http://www.bbc.co.uk/news/world-middle-east-15670301>) accessed 8 November 2017; ‘Blast Hits Gas Pipeline between Egypt and Jordan’, Reuters (07 July 2013) (<http://www.reuters.com/article/2013/07/07/us-egypt-protests-pipeline-idUSBRE66O5S020130707>) accessed 8 November 2017.
40 ‘Jordan: An Interview with HE Alaa Batayneh, Former Minister of Energy and Mineral Resources’, Natural Gas Europe (16 May 2013) (<http://www.naturalgaseurope.com/jordan-interview-alaa-batayneh>) accessed 8 November 2017; ‘Jordan to import LNG as Arab Gas Pipeline fails to deliver’, GASTECH News (2 September 2013) (<http://www.gastechnews.com/lng/jordan-to-import-lng-as-arab-gas-pipeline-fails-to-deliver>) accessed 8 November 2017.
41 ‘Tripartite Agreement to Activate the Arab Gas Pipeline’, 3 June 2014 (<http://alarabalyawm.net/?p=129401>) accessed 8 November 2017.
42 H Hafidh, ‘Iraq Shortlists Candidates to Build Export Pipeline to Jordan’, Wall Street Journal (4 September 2013) (<http://online.wsj.com/news/articles/SB10001424127887323304579950427236313830>) accessed 8 November 2017.
43 ‘The Absence of Syria Agreement ‘Energy Cooperation’ between Egypt, Jordan, and Iraq’, 3 June 2014 (<http://www.eqtsad.net/news/6297.html>) accessed 8 November 2017.
pipeline for the delivery of Egyptian gas to Europe. However, these future connections to the north is an ambitious plan that is unlikely to happen, given the supply-demand situation mentioned above, the economic feasibility and the complexity of cross-border infrastructure.

**Iraq–Jordan oil and gas pipelines Agreement**

In April 2013, Iraq and Jordan signed a Framework Agreement (Iraq–Jordan Agreement) to transport crude oil and natural gas from the Iraqi city of Basra to the Jordanian port of Aqaba. The expected completion date is 2018 and the pipeline is expected to have export capacity of 1 million barrels per day. Article 3.2 of the Iraq–Jordan Agreement facilitates the construction and operation of a gas pipeline, along with an oil pipeline, with a capacity of 258 million cubic feet of gas per day. A study by the Iraqi Government into the planned oil and gas pipeline has revealed that the project will cost between US$5 and 7 billion.

The project will be implemented by a developer who is committed to delivering the project in good condition to both countries at the end of a 20-year contract period. With respect to labour and local resources, the developer is committed to training personnel to attain a 100 per cent local workforce by the end of the contract. The developer is further committed to using local materials, conforming to certain standards and specifications. Local content requirements, however, can be an additional burden on the project’s feasibility.

The Iraq–Jordan Agreement seems to concern the export of Iraqi gas to Jordan at the initial stage, but it also clarifies that the oil and gas pipelines are also destined for supply and export of crude oil and gas. Article 7 of the Iraq–Jordan Agreement attempts to balance the obligations of the parties involved, and states that the investor commits to ensuring the continuous supply of energy. Article 7 of the Iraq–Jordan Agreement further clarifies the obligations of Jordan as the host government and clarifies transit rights for Iraq, which includes the security of land rights. The Iraq–Jordan Agreement also provides provisions on minimizing the harmful environmental impacts of transit, transit fees and local materials and labour, and makes clear reference to the settlement of disputes. In sum, transit is a complicated issue, which makes energy trade also complicated.

**DOLPHIN GAS PIPELINE PROJECT**

**An overview**

The Dolphin Gas Pipeline project is a natural gas project between Qatar, the UAE and Oman (Figure 4). Qatar is the world’s largest LNG producer, and all three parties to the project are members of the Gas

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44 ‘Ministers Agree to Extend Arab Gas Pipeline to Turkey’, Alexander’s Gas and Oil Connections (29 March 2006) <http://www.gasan doil.com/news/europe/b9b163f593a45de427bb8f32c499d08/> accessed 8 November 2017; S Clancy, ‘Pipeline Projects in the Middle East’, *Pipelines International*, March 2010 <http://pipelinesinternational.com/news/pipeline_projects_in_the_middle_east/040183/> accessed 8 November 2017.

45 Framework Agreement between the Republic of Iraq and the Hashemite Kingdom of Jordan to implement a project to transport Iraqi crude oil through the territory of the Kingdom of Jordan to the export terminal port (Aqaba) on the Red Sea coast for export with a parallel gas pipeline. The Jordanian Council of Ministers approved the agreement on 24 April 2013. To access the agreement, see <http://factjo.com/pages/print.aspx?id=40412> Model ent Agreements (accessed 8 November 2017) (in Arabic).

46 ‘The Absence of Syria Agreement ‘Energy Cooperation’ between Egypt, Jordan, and Iraq’, 3 June 2014 <http://www.eqtsad.net/news-6297.html> accessed 8 November 2017.

47 art 6 Iraq–Jordan Agreement.

48 ‘Iraq-Jordan Pipeline’, Iraq-business news, 24 March 2017 <http://www.iraq-businessnews.com/tag/iraq-jordan-pipeline/> accessed 8 November 2017.

49 Preamble to the Iraq–Jordan Agreement.

50 art 15 Iraq–Jordan Agreement.

51 art 7 Iraq–Jordan Agreement.

52 art 9 Iraq–Jordan Agreement.

53 arts 11–12 Iraq–Jordan Agreement.

54 art 15 Iraq–Jordan Agreement.

55 art 20 Iraq–Jordan Agreement.

56 For further details on energy trade, see R Leal-Arcas et al, *International Energy Governance: Selected Legal Issues* (Edward Elgar 2014).
Exporting Countries Forum (GECP)\(^{57}\) and the GCC.\(^ {58}\) The Dolphin Pipeline is the GCC’s first cross-border refined gas transmission project.\(^ {59}\) The first phase involved the development of two platforms in Qatar’s north field, two multi-phase offshore sea lines to the processing facilities as well as gas treatment and compression plants in Ras Laffan.\(^ {60}\) The second phase involved the construction of a 48-inch diameter, 260-mile (364 km) subsea natural gas pipeline carrying gas to a receiving facility in Taweerah (UAE), which was completed in August 2006.\(^ {61}\)

The gas supplies from Qatar to Oman run through the Al Ain–Fujairah pipeline (118 miles long), which was constructed in 2003 (and is officially considered a separate project).\(^ {62}\) Until 2008, the pipeline was used for supplying Omani natural gas to the Fujairah power and desalination plant. Since November 2008, the Dolphin Gas Pipeline has been used for regular natural gas export from Qatar to Oman.\(^ {63}\) However, Oman’s import of gas via the Dolphin Pipeline is relatively small.\(^ {64}\) A contract, signed in 2003, between Dolphin Energy Limited and Abu Dhabi Water & Electricity Authority (ADWEA) and the Union Water & Electricity Company (UWEC) to supply, \textit{inter alia}, future gas, guarantees the export of Qatari gas to Oman for 25 years.\(^ {65}\) Dolphin Energy Limited is the owner and operator of the international pipelines,

\(^{57}\) See <http://www.gecf.org/aboutus/faq> accessed 8 November 2017.
\(^{58}\) The Cooperation Council for the Arab States of the Gulf <http://www.gcc-sg.org/eng/> accessed 8 November 2017.
\(^{59}\) ‘Dolphin Gas Project, Ras Laffan, Qatar’, Hydrocarbons Technology <http://www.hydrocarbons-technology.com/projects/dolphin-gas/> accessed 8 November 2017.
\(^{60}\) ibid.
\(^{61}\) ibid.
\(^{62}\) ibid.
\(^{63}\) ibid.
\(^{64}\) ibid.
\(^{65}\) ‘Sheikh Hamdan Bin Zayed Al Nahyan, Dolphin Chairman, Signs Long-Term Gas Contracts with ADWEA and Uw’, Dolphin Energy, Press Releases, 19 October 2003, available at <http://www.dolphinenergy.com/en/23/media-centre/press-releases/?view=details&id=117&title=sheikh-hamdan-bin-zayed-al-nahyan-dolphin-chairman-signs-long-term-gas-contracts-with-adwea-and-uw> accessed 8 November 2017.
which have been recognized in the Qatar–United Arab Emirates Gas Pipeline Agreement, covered in the next section.

**Qatar–United Arab Emirates gas pipeline Agreement**

There is a bilateral gas pipeline agreement between Qatar and the UAE (Qatar–UAE Agreement). According to Article 4 of the Qatar–UAE Agreement, Dolphin Energy Limited is the owner and operator of the pipeline. Both countries commit to not objecting to the construction or operation of the pipeline by the owner and/or operator along the route illustrated on the map annexed to the agreement. The owner and operator of the pipeline is subject to the legislative requirements of either Qatar or the UAE with respect to the part of the pipeline which is located within the jurisdiction of each state.

The Qatar–UAE Agreement includes a provision which secures both governments the right to determine the safety measures and environmental protection standards which are to govern the construction, operation and abandonment of that part of the pipeline which is under its jurisdiction. The Qatar–UAE Agreement further provides for the establishment of a Joint Qatar–UAE Commission for the purpose of overseeing and facilitating the implementation of the agreement (on issues such as construction, operation and utilization of the pipeline, which are not otherwise provided for in any agreement relating thereto between either or both of the two governments and the owner and/or operator of the pipeline). The Joint Commission also serves as a mechanism to resolve disputes concerning the interpretation or application of the Qatar–UAE Agreement. The Qatar–UAE Agreement does not have clear provisions on transit rights, but its preamble makes clear reference to the approval of the export pipeline agreement between Qatar and Dolphin Energy Limited.

**Future Trends**

The GCC countries have a great interest in achieving the highest level of coordination. The GCC adopted an oil and gas strategy to cope with changing supply and demand in the energy market and to maintain stability in global markets. Moreover, the GCC is working on strengthening dialogue with China and the EU to open their markets to GCC exports of petroleum products. Naturally, Qatar, the world’s largest LNG producer, wants direct access to the booming EU gas market, where gas will have to be transferred via pipelines.

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66 Agreement between the Government of the State of Qatar and the United Arab Emirates regarding the transmission of gas through a pipeline between Qatar and the United Arab Emirates (Qatar–UAE Agreement) <http://www.almeezan.qa/AgreementsPage.aspx?id=1483&language=ar> accessed 8 November 2017 (in Arabic) and <http://www.almeezan.qa/AgreementsPage.aspx?id=1483&language=en> accessed 8 November 2017 (in English).
67 art 2 Qatar–UAE Agreement.
68 art 3 and Annexes 1 and 2 Qatar–UAE Agreement.
69 art 4 Qatar–UAE Agreement.
70 art 5 Qatar–UAE Agreement.
71 art 8 Qatar–UAE Agreement.
72 The Qatar–UAE Agreement also provides provisions regarding security arrangements (art 7) and exchange of information (art 9).
73 art 10 Qatar–UAE Agreement.
74 art 11 Qatar–UAE Agreement.
75 The Cooperation Council for the Arab States of the Gulf, Statute <http://www.gcc-sg.org/indexfc7a.html?action=Sec-Show&ID=1> accessed 8 November 2017.
76 This strategy aims to improve living standards and diversify the bases of national economies as well as expand the role of the private sector in member countries and reduce dependence on oil as a main source of national income.
77 The Cooperation Council for the Arab States of the Gulf, ‘Achievements of the Cooperation for the Arab Gulf States in the field of energy 2002–2010’ (GCC General Secretariat, Riyadh: Saudi Arabia, 2010), 10–14, <http://sites.gcc-sg.org/DLibrary/index.php?action=ShowOne&BID=390> accessed 8 November 2017 (in Arabic).
Turkey and Qatar are in negotiations to discuss the development of a Qatar–Turkey Natural Gas Pipeline. The pipeline would run from Doha to Istanbul, a distance of approximately 2,500 km. The pipeline would carry Qatari gas to the Mediterranean Sea, crossing Saudi Arabia, Jordan and Syria, and was envisioned to link with the eventually dismissed Nabucco gas pipeline. The Qatar–Turkey Gas Pipeline project is competing with the proposed Iran–Iraq–Syria Gas Pipeline, also known as the Friendship Pipeline or the Islamic Gas Pipeline. A framework agreement for the Iran–Iraq–Syria Pipeline was supposed to be signed in early 2013, but construction plans were delayed by the Syrian civil war. The Friendship Pipeline would have been a competitor to the Nabucco Pipeline, which was supposed to run from Turkey to Austria. It is also an alternative to the Qatar–Turkey Pipeline.

One can draw the conclusion that, in terms of feasibility (namely level of complexity) to develop major infrastructure projects for gas trade in the MENA region, it is credible and major clients such as Europe as well as other regions do need the gas, and therefore a regional market would be sizeable enough to justify the infrastructure costs.

3. ENERGY SUSTAINABILITY THROUGH TRADE

The economic burden of energy supply

The electricity and gas sectors in most countries in the region rely heavily on government support through direct or indirect subsidies due to largely inefficient systems. Given that the energy sector in some of these countries is run through state corporations, the inefficiencies of these corporations and the resultant lending activity, particularly in the electricity sector, to support the production and distribution of electricity, become public debts. In addition, retail tariffs for electricity and gas tend to be well below the cost of supply, resulting in the need for most governments to adopt some form of subsidization to ensure that energy remains affordable to consumers. Not only do these subsidies divert resources away from sectors where they are much needed, but they distort the economy and discourage further investment in the energy sector. A type of subsidization which primarily affects the liberalization of the energy market is regulated price control. Most governments in a bid to control the cost of electricity to the populace, adopt under-pricing policies that prevent realistic pricing of energy. While the socio-political objective for such price control mechanisms may be well-intended, they tend to favour the wealthier sections of the society and not the poor. Consequently, private investment in the energy sector is discouraged because, the attendant difficulty in recovering costs, impinge on the economic justification for investment in the sector. A progressive shift to a more market-oriented approach to pricing, which allows prices to be determined by the markets and not governments, would therefore attract private participation in the energy market. Not only would such liberalized markets result in the creation of employment through increased private sector participation, but they also promote competition. A more competitive energy market would promote competitive pricing for consumers and is more likely to ensure to the benefit of the poorer sections of society than current subsidy regimes.

The growing demand for energy in the region has required governments to direct significant resources towards augmenting supply, consequently increasing the fiscal burden of the sector. This burden has
become even more pronounced as most countries within the region are still recovering from the global effects of the 2008 financial crisis. Owing to the economic pressures faced by these countries, several infrastructural projects have been halted, while other countries have had to revise and, in some cases, scrap subsidies in the sector.

It is therefore imperative that initiatives adopted to address the energy problem within the region consider and make provision for measures aimed at reducing the economic burden of energy supply. Indeed, like previous regional initiatives (namely the Gulf Cooperation Council Interconnection Authority (GCCIA) and EIJLLPST), the PAEM proposes measures intended at reducing not only the cost to countries. It emphasizes the diversity of demand between the countries and proposes that trade and cooperation between countries with disparate demand could improve efficiency and ultimately reduce the cost of production. The World Bank also highlights the fact that power systems in Arab countries are generally small. Table 2 of the Annex summarizes the key elements of the individual capacities of countries in the region. Therefore, regional integration would enable member states to attain economies of scale as well as improved opportunities for financing, increased production and service delivery.

While the importance of improving production efficiency, cost recovery and their associated cost reduction benefits to governments cannot be underestimated, it is important to take steps to reduce subsidies in the energy sector to strengthen its financial sustainability. Although subsidies are perceived as a positive social intervention strategy, they have created graver problems than the imbalances they are intended to address in the Arab region. Subsidy reform would free-up resources for productive public spending, which would further boost economic growth by reducing lower budget deficits and stimulating private sector investment.

In recent years, subsidy reform in the MENA region has been spurred by growing awareness to the negative effect of subsidies as well as the exhaustion of fiscal and external buffers following the impact of the 2008 global financial crisis on commodity prices. Be that as it may, the political will required to implement the necessary policy changes within the region is largely impinged by the primacy of oil production to the economic fortunes of many countries within the region. Oil production accounts for more than half of the GDP of most countries within the region. Consequently, economic growth within these countries has suffered due to recent low oil prices and the OPEC-agreed oil production cuts.

The natural response by most governments would be to protect reserves and adopt strategies to protect the primary source of budget funding. This has negative implications for regional energy integration. For instance, countries with a surplus of oil are more likely to sell the surplus to Europe and Asia to support their budgets, rather than entering into regional initiatives, which would require the sharing of such surplus to support energy supply. A change in economic paradigms is therefore required to influence policy that affects the energy sector. Such a change would involve a diversification of their economies, to reduce the need to adopt policies targeted at protecting oil revenue.

A positive example is provided within the region by countries like Bahrain, Algeria and Yemen. As at 2014, these countries had successfully diversified their economies resulting in non-oil sector contribution of 73 per cent, 76 per cent and 80 per cent to national GDP, respectively. Foreign direct investment (FDI)
plays a crucial role in the process of diversification. To promote FDIs, countries within the region should adopt policies aimed at developing the financial and legal sectors. The UAE for instance also adopted policies aimed at attracting foreign direct investment by offering 100 per cent foreign ownership.

Undoubtedly, there is room for the creation of a shared vision for economic diversification within the region. The OECD, through the Centre for Tax Policy and Administration and the MENA-OECD Investment Program, has already taken steps at engaging countries within the region on these issues. These discussions provide a useful building block for the development of a regional diversification program to reduce overall reliance on oil within the region.

Less reliance on oil revenue would not only facilitate the adoption of sustainable energy policy, but it could, as in the case of the UAE, offer opportunities at directing investment for the energy sector. Diversification would also foster private participation in many sectors of the economy, thereby freeing states from the burden of service provision, and ultimately reduce the fiscal burden of the government.

Maximizing the societal gains through trade within and beyond the MENA region

The energy sector is quintessential to a country’s development. Not only can it serve as the catalyst for economic development as in the case of the oil-rich nations within the region, but it is also necessary condition for infrastructural development. Beyond these, improving energy trade has the potential of addressing several of the social challenges which countries within the region are currently facing.

Primarily, the aim of an integrated energy market would be to secure energy provision within the region. This would mean not only the augmentation of supply levels to meet demand, but also to ensure that energy is affordable to all segments of consumers. As has been alluded to earlier in this article, the social intervention policies have done very little to ensure that the poorer sections of the public can actually afford energy. The affordability of energy is largely impinged by high production costs and inefficiency, which energy suppliers naturally would pass on to consumers. Consequently, through regional integration, countries within the region can optimize supply and reduce inefficiency, while adopting more dynamic tariff systems and conservation strategies. These will contribute to the lowering of prices for consumers, particularly for poorer sections of the public. This is, however, dependent on a transition from a state-controlled pricing policy to a market-based approach to pricing.

Further, the diversification of the energy market both in terms of production sources and private sector participation, would result in the creation of jobs in the energy and other related sectors. This would help alleviate the problem of unemployment which many of the countries within the region are currently facing, and ultimately contribute to poverty reduction in the region. This potential would further be augmented by regional integration, which would see these gains being replicated on a regional level, through the creation of jobs internationally. Regional job creation and its attendant potential for migration would also foster greater social interaction which could contribute towards promoting greater socio-political tolerance. Though the development of local and regional job markets may prove to be a challenge in the short term due to the human capital needs associated with the deployment of new technologies, it also presents an opportunity for the education sector, which would be required to contribute to filling the human-capital requirement gap.

Towards clean energy

The MENA region is very diverse: some countries have fossil fuels, others do not, but all of them have an immense potential for renewable energy. Yet, the MENA region has one of the lowest levels of investment

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93 For further analysis on FDI, see Leal-Arcas, R. International Trade and Investment Law: Multilateral, Regional and Bilateral Governance, Edward Elgar, 2010, Part 2.
94 CIA World Fact Book <https://www.cia.gov/library/publications/the-world-factbook/geos/ae.html#Econ> accessed 6 April 2017.
95 For further details on renewable energy governance, see Leal-Arcas, R. and Minas, S. “Mapping the international and European governance of renewable energy,” Oxford Yearbook of European Law, Vol. 35, No. 1, pp. 621-666, 2016.
in renewable energy in the world. This means that renewable energy in the MENA region has phenomenal potential. Indeed, this part of the world is blessed with unique solar irradiance and the wind energy prospects are also important. Research by the Internal Energy Agency (IEA) estimates that concentrated solar power technology alone could amount to 100 times the electricity demand of the MENA region and Europe combined. Some countries such as Egypt, Jordan, Morocco and the UAE are leading the way on this front. Broadly speaking, the declining oil prices and the need for economic diversification are the major reasons to engage in renewable energy. For instance, 85% of Saudi Arabia’s export earnings stem from oil and gas exports.

There are still barriers to renewable energy promotion (which also applies to trade in electricity and gas):

1. Energy subsidies given to the fossil-fuel industry;
2. Legal and administrative complexities;
3. Weak regional interconnections; and
4. Awareness of affordability.

Of the MENA countries, only a few have written policies on renewable energy. In Sudan, for instance, there is no policy for renewable energy or solid business models to exploit the potential of renewable energy. In Libya, electricity is heavily subsidized by the Government, which means that there is little incentive to make a transition to renewables. So a vision and policies are needed to implement renewable energy. Yet, it is encouraging to note that some of the MENA countries are part of the International Solar Alliance, a group of sunshine countries based between the Tropic of Cancer and the Tropic of Capricorn, where the potential of solar energy is phenomenal. Furthermore, a strong link between energy security and climate change mitigation is the use of renewable energy to diversify energy sources and, therefore, enhance energy security. The use of renewable energy, in turn, is a way to mitigate climate change.

Despite having what many consider the greatest potential for renewable energy, the MENA region has failed to harness this potential. As Figure 5 below indicates, the share of renewable energy in the energy mix of the region was only 6 per cent as of 2014. Tunisia is the region’s leader with 13 per cent renewable energy share, while Egypt, Israel, Jordan, Lebanon, Morocco, and Yemen have between 1 per cent and 5 per cent renewable energy share. While Iraq and Iran have 0.9 per cent and 0.5 per cent, all the other countries in the region effectively do not use energy from renewable sources.

The desire to improve supply security has however led to region-wide commitment to improving the situation, with many countries setting targets for the improvement of the renewable energy share of their energy mix. This shift is motivated by different factors—while for countries like Jordan and Morocco, it is to meet shortfalls in energy production, countries like the UAE, Qatar and Kuwait aim to preserve domestic oil for exportation. In furtherance of this commitment, as many as 17 of the countries in the region have

96 International Energy Agency, "Technology Roadmap. Concentration Solar Power", p. 10, available at <https://www.iea.org/publications/freepublications/publication/csp_roadmap.pdf> accessed 8 November 2017.
97 The Organisation of the Petroleum Exporting Countries, "Saudi Arabia facts and figures", available at <http://www.opec.org/opec_web/en/about_us/169.htm> accessed 8 November 2017.
98 http://www.intsolaralliance.org/. For a list of prospective countries of the International Solar Alliance, see <http://www.intsolaralliance.org/countries_2.html> accessed 8 November 2017.
99 For a map of the so-called global sunbelt, see <http://www.greenrhinoenergy.com/solar/radiation/empiricalevidence.php> accessed 8 November 2017.
100 For further analysis on the links between climate change, international trade and energy, see R Leal-Arcas, Climate Change and International Trade (Edward Elgar Publishing Ltd 2013).
101 David R Jalilvand, Renewable Energy for the Middle East and North Africa: Policies for a Successful Transition (Friedrich Ebert Stiftung Study, February 2012).
102 ibid.
103 The heads of Arab countries for instance expressed this commitment in the Damascus Declaration of 2007.
104 Squire Sanders, ‘The Future For Renewable Energy in the MENA Region’ (Clean Energy Pipeline Report).
set renewable energy targets to be attained by the year 2030. Table 3 of the Annex shows targets set by countries within the region. However, recognizable efforts can only be seen in Jordan, Morocco, Qatar, the UAE and Kuwait, where significant reform and investment appear to have been made in furtherance of the set targets. Countries like Algeria, Turkey, Egypt and Israel, however, have made some commendable progress with smaller scale projects.

Morocco is one of the most remarkable examples. This is so due to its spirited energy transition but not least because of its role of clean energy gateway to Europe. Morocco committed itself to increase its share of renewable energy electricity to 52 per cent by 2030. To that end, Morocco has taken several measures such as the creation and expansion of the Noor solar complex, located near its Southern desert town of Ouarzazate, one of the largest solar plants in the world. In fact, although 100 per cent energy from renewables may not yet be possible, 100 per cent electricity from renewables is a possibility.

There is currently only one electrical transmission interconnection between North Africa and Europe, namely the Morocco–Spain interconnector. In that vein, the EU also seeks to diversify the supply of its energy sources. Thus, the European continent could constitute an attractive market for Morocco to export its surplus clean energy power. The Morocco-Spain interconnection enjoys a capacity of 1,400 megawatts (MW) which should hopefully reach 5,400 MW by 2019. Morocco could export more renewable energy electricity to Spain, and therefrom to the rest of the EU, without either party having to prominently invest in transmission infrastructure.

Such ventures could be further ways to advance energy integration in the MENA region. If like-minded nations to Morocco such as Egypt, Jordan or the UAE were to cooperate, the rise of renewables could entail several benefits. Firstly, these projects would create employment and economic stability in a politically unsettled region. Secondly, these schemes would deliver energy that is clean, reliable and sustainable. Indeed, renewable energy constitutes the cleanest and, in the long-term, safest alternative to diversify the MENA region’s energy mix which heavily relies on fossil fuels. Finally, further trans-continental transmission

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105 Rahmatallah Poudineh, Anupama Sen & Bassam Fattouh, ‘Advancing Renewable Energy in Resource-Rich Economies of the MENA’ (Oxford Institute for Energy Studies (OIES PAPER: MEP 15), September 2016).
106 The Guardian, ‘Morocco Lights the Way for Africa on Renewable Energy’ <https://www.theguardian.com/global-development/2016/nov/17/cop22-host-morocco-lights-way-africa-renewable-energy-2020> accessed 8 November 2017.
107 S Mobarek. ‘Renewable Energy Export-Import: A Win-win for the EU and North Africa’, World Bank Blog <http://blogs.worldbank.org/energy/renewable-energy-export-import-win-win-eu-and-north-africa> accessed 8 November 2017.
interconnections would reinforce the MENA region’s ties with the EU (an eager energy importer) by exporting its surplus lower-cost renewable energy.

A question for which critical consideration is required, is whether investment in renewable energy can be justified, as opposed to continuous reliance on fossil fuels, which come at a lesser cost to many countries in the region. Indeed, the high costs associated with the development and deployment of renewable energy cannot be ignored.108 However, given the vast availability of renewable energy sources (solar and wind) within the region, it is believed that the region presents the most viable option for a transition to renewable energy-based power system.109 Further, given the global consensus on benefits of renewable energy development, there exist various funding options which lessen the burden on states. In addition to the various funding mechanisms that exist for renewable energy development, there exists a strong case for concerted national action, as well as regional integration if the economic barrier to the development of renewable energy is to be addressed.

The potential that regional integration programs like the PAEM present for improving renewable energy penetration cannot be overstated. In keeping with this, the PAEM envisages an integrated supply system which aligns with national renewable energy goals. It recognizes that interconnection of electricity from renewable energy sources has implications for the overall capacity of the market and requires dedicated transmission lines for connection to the integrated grid. It also recognizes that the growth in renewable energy would impact positively on market’s electricity export agenda while diversifying power generation within the market. Consequently, borrowing from the EU, one of the objectives of the proposed transitional market design for PAEM is to improve ‘sustainability as it relates to use of natural resources and their impact on the environment’.110 A successful implementation of the EU’s model would therefore see the PAEM setting targets for the production of energy from renewable sources, greenhouse gas emissions, and energy efficiency gains.111

Given that the responsibility for the development of renewable energy is largely at the national level, several national actions, such as the following should be considered:

i. The re-evaluation of energy pricing and subsidy policies, as current levels of subsidization would render energy from renewable sources uncompetitive.112

ii. Regulatory reform, aimed both at providing fiscal incentives for renewable energy, and the creation of competitive markets to promote private sector participation. This could be done through the institution of tax benefits and reward schemes like feed-in-tariffs, and the introduction of competitive procurement procedures.

iii. The establishment of institutions with requisite capacity to support, promote and facilitate the development of renewable energy.

iv. The integration of environmental and climate change concerns into broader national strategies. This will ensure that complementary policies are adopted in other sectors to prevent the erosion of the gains made by reforms in the energy sector.

108 It is worth noting that the cost of renewable energy deployment continues to decrease. The cost of large-scale renewable energy sources such as offshore wind, concentrated solar power (CSP) and photovoltaic (PV) have fallen over the years. See: ‘Levelised Cost of New Generation Technologies’, Institute for Energy Research (May 2009) <http://www.instituteforenergyresearch.org/2009/05/12/levelized-cost-of-new-generating-technologies/> accessed 8 November 2017.

109 Dii (Desertec Industrial Initiative), Desert Power: Getting Started, The Manual for Renewable Electricity in MENA (2013), Policy Report, Dii.

110 The World Bank (n 5) page 120.

111 ibid.

112 Laura El-Katiri, ‘A Road Map for Renewable Energy in the Middle East and North Africa’ (Oxford Institute for Energy Studies (OIES PAPER: MEP 6), January 2014).
These national efforts could then be augmented and supported by a regional integration program. For instance, the integration of electricity markets would ensure that the negative effects of the unstable and unpredictable nature of renewable energy supply in individual states are mitigated through capacity sharing and load distribution. Regional integration could also provide an opportunity for joint investment in renewable energy research, development and deployment. Thereby ensuring that countries within the region which are unable to harness their renewable energy potential are assisted, to the benefit of the entire region. Further, an integrated market also facilitates information sharing which in turn would support research and development. Finally, a region-wide institutional arrangement modelled on the EU’s system would go a long way to facilitate the attainment of shared goals.

Another component of energy sector administration which affects the environment is supply and demand management. Developmental planning in many countries fails to address this, as a result energy supply is usually incongruent with both the economic reality and energy needs of the country. As has been alluded to earlier in this article, this has proven to be the case in many countries in the region. While adopting policies to address the problem of production efficiency. It is prudent to consider a region-wide, conservation and consumption efficiency policy.

The PAEM provides a relevant example, in that, it provides the framework for inter-state distribution of electricity based on the diversity of demand in member countries. However, the gains to be achieved by this may be eroded by the absence of, or disparity in national conservation policies. Therefore, to optimize the gains of the regional integration program, there would be the need to unify the conservation policies of all Member States. This is easily achievable within the PAEM as it already provides the framework for the sharing of information, technology and infrastructure. Consequently, it would be easy to assess, measure, develop and implement measures to ensure effective and efficient energy use measures. Given that efficient energy management schemes require considerations for sustainable development of the energy sector, this would not only ensure adequate resource management, but would go a long way to promote the development of renewable energy within the region. In other words, development is not possible without energy and sustainable development is not possible without sustainable energy.

While efforts are being taken to increase energy generation from renewable energy sources, it is also important to consider the role of trade in natural gas in the transition from reliance on fossil fuel to ‘greener’ sources. Owing to its environmental friendliness, natural gas is the fossil fuel of choice. Therefore, promoting gas-fuelled generation is worth considering as an interim measure. Desertec industrial initiatives (Dii) projections indicate that once the full potential of renewable energy is realized in the region, renewable energy will account for 98 per cent of the regions energy needs while 2 per cent would be through gas generation. This means current infrastructure, trade and cooperation which are largely centred on oil would become redundant.\footnote{Dii (Desertec Industrial Initiative), \textit{Desert Power: Getting Started, The Manual for Renewable Electricity in MENA} (2013), Policy Report, Dii page 74.}

Although it may be argued that these scenarios are based on 30–40 years scenarios and are therefore of little relevance to today’s policies, the introduction of trade in gas in current energy trade discussions would go a long way to ensure a smooth transition towards the realization of the envisaged renewable energy scenarios. Further, it is estimated that although the initial cost of installing gas-fired production units is high (compared to nuclear energy, which is the proposed alternative), the overall cost of a nuclear plant is much higher, including the risk of nuclear disasters.\footnote{David R Jalilvand, ‘Renewable Energy for the Middle East and North Africa: Policies for a Successful Transition’ (Friedrich Ebert Stiftung Study, February 2012).} All the above issues could be further elaborated in the framework of...
the Pan-Arab Clean Energy Initiative. Finally, in the aspiration towards clean energy, a roadmap should be put in place:

1. Long-term target: leaving fossil fuels behind;
2. Mid-term target: making fossil fuels as environmentally friendly as possible. For instance, via carbon capture and storage;
3. Short-term target: trying to reach quick solutions.

4. REGIONAL TRADE AGREEMENTS AS A MEANS TO PROMOTE PEACE AND ENERGY SECURITY

Fundamentals for effective regional trade

Beyond the development of infrastructure, and the entry into force of cooperation agreements, the success of regional trade initiatives is dependent, as depicted in Figure 6, on the complex interplay of norm creation, the existence of robust institutional frameworks, as well as strong political will to pursue the objectives of the initiative. The complexity of the relationship between these complementary factors lies in the inherent conflict of the primary objective of each factor. For instance, while institutional frameworks for regional initiatives are developed with neutral political sensitivity, and usually with an eye on the ‘bigger picture’, governments which participate in these initiatives often do so in line with parochial political motivations. However, it is often the case that opposing considerations make a case for fostering the development of the initiative, rather than frustrating it. Therefore, achieving synergies between these factors ensures the sustainability and progress of regional trade initiatives.

The creation of a regional institution or structural framework is critical to the growth and development of any regional initiative. This would usually take the form of an administrative or quasi-administrative body

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115 For further details, see <http://www.rcreee.org/news/pan-arab-clean-energy-initiative-pace1st-consultative-expert-workshop-%E2%80%93-maghreb-region> accessed 8 November 2017.

116 For an in-depth analysis of sustainability in the context of common concern, see R Leal-Arcas, ‘Sustainability, Common Concern and Public Goods’, (2017) 49 The George Washington International Law Review 801–77.
with relevant expertise and representation from all member countries, whose main objective would be to oversee the implementation of the goals of the initiative. The effectiveness of such a regional institution could be augmented by giving it dispute resolution functions. The nature of such institutional frameworks could range from a formally established entity to standing or ad hoc committees that meet regularly to undertake their duties. This would largely depend on the amount of financial resources member countries would be willing to contribute towards the running of the institution. Given that resource allocation to infrastructural development towards market integration would be high, a prudent approach for the MENA region would perhaps be to extend the powers of existing institutions such as the LAS to undertake the responsibilities envisaged by the initiative. Regardless of what nature it takes, it is critical that the composition and remits of such an institutional framework be fully delineated if the regional initiative is to succeed.

A properly functioning trade regime would also require the existence of a robust and dynamic set of rules to regulate, amongst others, market access; market standards and operations; pricing; taxation; and competition within the market. The existence of these provides the degree of certainty that is required for the sustenance and growth of any market. The trend in developed regional markets such as the EU points to a multilevel approach to regulation, where minimum standards are set at the regional level, with different degrees of implementation at the national level. While this may be a practical approach during the embryonic stages of the market, the goal should be a progressive harmonization of rules across Member States. This would make for greater certainty, transparency and predictability within the market and ensure uniform development across the market.

As important as the afore-discussed elements are, they are largely dependent on the will of Member States to see them to fruition. It is axiomatic to say that governments of Member States are the main actors in any regional trade initiative. Without the willingness of governments to develop and participate in the proposed initiative, they will remain but plans. It is important that governments be made to understand that, despite their individual national developmental agenda, cooperation through trade serves as a catalyst to socioeconomic development. Therefore, resources that are directed at promoting regional integration and cooperation do not necessarily detract from national plans, but rather promote, in the long term, the individual national goals. Such a ‘bigger picture’ outlook also goes a long way to help displace other divisive considerations such as culture, language and religion.

The fact that establishing the requisite balance is desired by many actors in proposed regional initiatives is not in doubt. However, seeing the proposals through to completion often proves quite challenging. In this regard, established multinational organizations such as the World Bank and regional multilateral financial institutions may prove valuable in providing the required technical and experiential assistance.

The recent signing of an MoU for the establishment of the PAEM117 by the Kingdom of Saudi Arabia, the UAE, Bahrain, Algeria, Sudan, Iraq, Oman, Qatar, Union of the Comoros, Kuwait, Egypt, Libya, Morocco and Yemen typifies a move towards establishing the requisite synergies. The PAEM represents a shared vision for increased power trade and the potential to expand to the European, African and Asian energy markets. The initiative has been developed largely under the auspices of the World Bank Group, which has been instrumental in various studies into the feasibility of the development of the market as well as research into the appropriate regulatory and institutional framework. The World Bank Group continues to work closely with countries in the region to develop a plan for the realization of the proposed PAEM. One could replicate this effort for a PAGM.

Past experiences
Regional Trade Agreements (RTAs) have experienced a striking evolution, both in terms of number and breadth, since the 1990s. This development has been so prominent that, as of June 2016 with the notification of the RTA

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117 Saudi Arabia Signs MOU to Establish Arab Market for Electricity (Asharq Al-Awsat English – April 6, 2017) <http://english.aawsat.com/asharq-al-aawsat-english/business/saudi-arabia-signs-mou-establish-arab-market-electricity> accessed 13 April 2017.
between Japan and Mongolia, all World Trade Organization (WTO) members have an RTA in force.\textsuperscript{118} The basic premise of an RTA is the reduction of tariff barriers between its parties. Liberalization is the best approach to instigate regional trade.\textsuperscript{119} In turn, regional trade entails benefits which can go well beyond the economic growth and competitiveness of the parties involved.

As far as the MENA region is concerned, the most comprehensive agreement is the Greater Arab Free Trade Area (GAFTA).\textsuperscript{120} The GAFTA is composed of 17 Member States: Algeria, Bahrain, Egypt, Iraq, Kuwait, Lebanon, Libya, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, UAE and Yemen.\textsuperscript{121} Despite being in force since 1998, this RTA has failed to revitalize the low levels of intra-MENA trade. This is so due to several causes, in addition to the prevailing social and political unrest that characterizes the region. For instance, the similarity of production and export structures; previous international sanctions against Iraq, Libya and Syria; differences in per-capita income; and the strife among Maghreb countries with regard to Western Sahara has also been identified as a possible ground to explain why the region prefers to engage in trade with external actors, rather than between its Member States.\textsuperscript{122} In other words, socio-political disruptions are undermining the trust between Member States. In turn, this political wariness is preventing the GAFTA from harnessing its full regional trade potential. Moving forward, the MENA region should try to work closer together to get rid of these obstacles to regional trade by diversifying production and exports, by aiming at resolving disputes in the region, and by promoting greater exchange of workers and youth in the region.

Several RTAs contain provisions which directly address the energy sector. Examples of such agreements include the North American Free Trade Agreement (NAFTA) or the Energy Charter Treaty (ECT). RTAs are perceived by several countries as providing a better suited legal framework to multilateralism when it comes to energy trade regulation. This is so as they typically include more detailed provisions that tackle the specific energy concerns of the parties to the RTA.\textsuperscript{123} Furthermore, RTAs have the potential to be conducive to peace. Broadly speaking, regional trade integration fosters interdependence between countries, creates economic incentives for peace, and nurtures diplomatic avenues to solve disputes.\textsuperscript{124} The European Union (EU), the European Atomic Energy Community (EURATOM), the Association of Southeast Asian Nations (ASEAN) and the Southern Common Market (MERCOSUR) are success stories that illustrate how regional trade integration can promote peace. The inception of these trading blocs was pivotal to allay the fears of further armed conflicts between Member States in the region. As such, they constitute valuable examples that may spur the MENA region to emulate a similar effort. What constitutes the sense of urgency for MENA countries to get them to emulate the establishment of a trading bloc is the fact that, as a result, they could reach peace in the region, generate wealth and jobs, solve disputes, and avoid future wars between themselves, as we have seen in the case of the EU.

In short, this section emphasizes the role of RTAs as peacemakers as well as avenues to promote energy security.

\textsuperscript{118} World Trade Organization, ‘Regional Trade Agreements’ <https://www.wto.org/english/tratop_e/region_e/region_e.htm> accessed 8 November 2017.
\textsuperscript{119} World Bank, ‘Regional Trade Agreements: Effects on Trade’, Global Economic Prospects, 57, 2005.
\textsuperscript{120} Republic of Lebanon, Ministry of Economy and Trade, ‘Greater Arab Free Trade Area’, <http://www.economy.gov.lb/?/subSubcatinfo/2/91> accessed 8 November 2017.
\textsuperscript{121} Bilaterals org, ‘GAFTA’ <http://www.bilaterals.org/?-GAFTA-> accessed 8 November 2017.
\textsuperscript{122} A Dennis, ‘The Impact of Regional Trade Agreements and Trade Facilitation in the Middle East and North Africa Region’ World Bank Policy Research Working Paper 3837, 5, 2006.
\textsuperscript{123} W Shih, ‘Energy Security, GATT/WTO and Regional Agreements’ Society of International Economic Law Working Paper No 10/08, 41, 2008.
\textsuperscript{124} O Brown et al, ‘Regional Trade Agreements: Promoting Conflict or Building Peace?’ International Institute for Sustainable Development, 14, 2005.
The EU and EURATOM\textsuperscript{125}

The creation of the EU ensued from the Treaty of Paris establishing the European Coal and Steel Community, concluded in 1951 between its six founding Member States (Belgium, France, West Germany, Italy, the Netherlands and Luxembourg). In the wake of World War II, these countries not only agreed to cooperate to ensure peace, but also to prevent competition between European countries over energy resources. Ever since, the EU has progressively expanded to 28 Member States which have arguably achieved prosperity through trade liberalization. The national energy markets of EU Member States have become further integrated over the course of the years.

The EU has encouraged the development of energy network in a number of ways:

- by financing, at the European level, the construction of trans-European energy networks;
- by adopting measures to foster the liberalization and opening-up of electricity and gas markets; and
- by creating specialized European bodies to facilitate cooperation between transmission system operators (TSOs) and energy regulators, such as the European Agency for the Cooperation of Energy Regulators (ACER).

Instead of pressing for a top-down common European blueprint, the latest developments suggest that a bottom-up regional approach seems to be more attuned to effectively integrate energy markets. For instance, the success of the Nordic power market (Nord Pool) supports this statement. Indeed, this bottom-up initiative resulted in the effective integration of the electricity markets of several EU Member States (Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Sweden and the UK) as well as Norway. This is so as nations usually prefer to cooperate with their neighbours with whom they share similar challenges and interests, rather than at the EU level where a common solution tends to be more difficult to reach. This trend has been acknowledged and is strongly advocated by the European Commission itself. Thus, the progressive fusion of ventures led by clumps of Member States within the EU is gradually paving the way to complete the Internal Energy Market as a whole.

The launching of a very ambitious initiative for the establishment of the European Energy Union\textsuperscript{126} in February 2015 represented a milestone in terms of EU energy policy.\textsuperscript{127} This initiative was undertaken in an effort to ensure resilience and facilitation of regional energy trade. The Energy Union is already delivering tangible results (eg, the inauguration of the Santa Llogaia–Baixa’s power line, which doubles the interconnection capacity between France and Spain).\textsuperscript{128} Furthermore, an array of projects are lined up to foster energy security as well as cross-border energy trade within the EU. This regional energy venture is set to streamline shared welfare while warranting affordable, secure and sustainable energy through energy trade. The European Energy Union revolves around five pillars:

1. Security, solidarity and trust;
2. Finalization of the internal energy market;
3. Moderation of demand through energy efficiency;

\textsuperscript{125} This sub-section draws largely from R Leal-Arcas and J Alemany Rıós, ‘How can the EU Diversify its Energy Supply to Improve its Energy Security?’ \textit{Queen Mary University of London School of Law Legal Studies Research Paper} No 190/2015, 3–5, 2015.

\textsuperscript{126} See Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, ‘A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy’ COM(2015) 80 final (25 February 2015). For an analysis of the European Energy Union, see R Leal-Arcas, \textit{The European Energy Union: The Quest for Secure, Affordable and Sustainable Energy} (Claeys & Casteels Publishing 2016).

\textsuperscript{127} For a comprehensive analysis of EU energy law and policy, see R Leal-Arcas and J Wouters (eds) \textit{Research Handbook on EU Energy Law and Policy} (Edward Elgar Publishing Ltd 2017).

\textsuperscript{128} European Commission, ‘Building the Energy Union: Key Electricity Interconnection Between France and Spain Completed’ press release 20 February 2015 <http://europa.eu/rapid/press-release_IP-15-4463_en.htm> accessed 8 November 2017.
4. Decarbonization of the European energy mix; and
5. Technologies, research and innovation.\textsuperscript{129}

As for the European Atomic Energy Community (EURATOM), the Treaty establishing the EURATOM was signed in 1957. The EURATOM is a separate international organization to the EU but has close ties with the latter (eg the EURATOM has the same membership as the EU). The rationale behind the creation of this entity was that nuclear energy represents an essential resource for industrialization and the advancement of peace. The community aims to create the conditions necessary for the development of a powerful nuclear industry which will provide extensive energy resources, lead to the modernization of technical processes, and contribute, through its many other applications, to the prosperity of its peoples.\textsuperscript{130} More remarkably, the EURATOM enjoys exclusive jurisdiction over nuclear supply both in internal and external relations.\textsuperscript{131} In the same vein as the EU with the ACER and TSOs, the EURATOM also counts with ad hoc institutions to regulate energy trade such as the EURATOM Supply Agency (ESA), for instance.

**ASEAN**

The ASEAN was established through the Bangkok Declaration in 1967 by its founding fathers (Indonesia, Malaysia, Philippines, Singapore and Thailand). The declaration was signed in the aftermath of a period fraught with tension and disputes in the region. The thorniest episode arguably being the Indonesian–Malaysian confrontation or Konfrontasi (1963–1966) which was a violent conflict where Indonesia initially opposed the creation of Malaysia. All these incidents prompted the gathering of these five nations under the ASEAN to prevent future disputes. To that end, the Bangkok Declaration spelled out cooperation in the economic, social, cultural, technical, educational and other fields; as well as the promotion of regional peace.\textsuperscript{132} The ASEAN’s membership gradually increased to its current 10 Member States (Brunei, Cambodia, Laos, Myanmar and Vietnam joined at a later stage). The ASEAN has successfully achieved to avert major conflicts among its Member States. The bloc has done so by implementing two key principles: respect for sovereignty and peaceful settlement of disputes.\textsuperscript{133}

The ASEAN energy policy is geared towards setting a regionally harmonized framework of energy supply as a means to encourage industrialization and economic growth.\textsuperscript{134} The ASEAN created the ASEAN Centre for Energy (ACE) in 1999 to accelerate the integration of energy strategies of its Member States. More recently, the ASEAN Energy Market Integration (AEMI) initiative was launched in 2013. Connectivity and energy market integration are the prime concerns outlined by the ASEAN Plan of Action for Energy Cooperation (APAEC) 2016–2025.\textsuperscript{135} To that end, the plan delineates several key strategies (eg to initiate multilateral electricity trade in at least one sub-region by 2018; to enhance connectivity for energy security and accessibility via pipelines and regasification terminals; to increase the component of renewable energy to

\textsuperscript{129} For a comprehensive analysis of the European Energy Union see R Leal-Arcas and J Alemany Rı´os, ‘The Creation of a European Energy Union’ (2015) 5 European Energy Journal 24–60.

\textsuperscript{130} Preamble of the Treaty establishing the EURATOM.

\textsuperscript{131} arts 52–76 of the Treaty establishing the EURATOM. Furthermore, art 86 asserts that all special fissile materials automatically become the property of the community.

\textsuperscript{132} The Association of Southeast Asian Nations, ‘History. The Founding of ASEAN’ <http://asean.org/asean/about-asean/history/> accessed 8 November 2017.

\textsuperscript{133} P Heng, ‘The ASEAN Way and Regional Security Cooperation in the South China Sea’, Robert Schuman Centre for Advanced Studies Research Paper No 2014/121, 1, 2014.

\textsuperscript{134} B Sovacool, ‘Energy Policy And Cooperation in Southeast Asia: The History, Challenges and Implications of the Trans-ASEAN Gas Pipeline (TAGP) Network’ 37 Energy Policy, 2357, 2009.

\textsuperscript{135} ASEAN Energy Market Integration, ‘AEMI Initiative Developing ASEAN Solution to Fight Energy Poverty’ <http://www.asean-aemi.org/> accessed 8 November 2017.
23 per cent by 2025 in the ASEAN energy mix; to reduce energy intensity by 20 per cent in 2020 based on 2005 level).\textsuperscript{136}

**MERCOSUR**

The Treaty of Asunción signed in 1991 by Argentina, Brazil, Paraguay and Uruguay established MERCOSUR. This regional grouping was initially founded to reduce the tensions between Argentina and Brazil. In addition, MERCOSUR also contributed to thwart a possible coup in Paraguay through the affirmation by the presidents of its Member States that democracy was a necessary requisite to join.\textsuperscript{137} MERCOSUR is the world’s fourth largest integrated economic bloc. It is the most advanced trade integration venture in the developing world.\textsuperscript{138} Venezuela joined MERCOSUR in 2012 while Bolivia is currently in the process of becoming a full member. This initiative has enabled its Members States to overcome their historic mutual distrust and consolidated peaceful democracy in South America’s Southern Cone.\textsuperscript{139} Furthermore, MERCOSUR can be regarded as a Latin America initiative to counter the influence of other regional trading blocs (ie NAFTA). In addition, MERCOSUR was also envisioned as a platform to enable its Member States to tackle common security concerns such as drug trafficking.\textsuperscript{140}

In general terms, the energy situation in Latin America is rather promising. South America boasts 10 per cent of the world’s oil resources as well as 5 per cent of its gas reserves. Nevertheless, the distribution of these resources renders energy policy truly challenging. Indeed, most of this energy wealth is harboured in politically unstable countries such as Venezuela.\textsuperscript{141} Prima facie, the latter’s accession to MERCOSUR reinforced the belief that the bloc had the potential to become an energy juggernaut. Nevertheless, Venezuela’s failure to meet human rights and trade standards motivated MERCOSUR’s decision to suspend its membership in December 2016.\textsuperscript{142}

Even though the Treaty of Asunción fails to address energy, MERCOSUR has taken several steps towards the integration of energy markets in the Southern Cone. Memorandums of Understanding were adopted to promote electricity and gas integration in 1998 and 1999, respectively. These measures endeavoured to guarantee free market conditions thereby streamlining the free movement of electricity and gas among Member States.\textsuperscript{143} Moreover, a Framework Agreement on Regional Energy Cooperation between MERCOSUR Member States and its Associated States (Chile, Colombia, Ecuador, Guyana and Surinam) was signed in 2005.

**Suggestions for the MENA region**

The EU, the EURATOM, the ASEAN and MERCOSUR are revealing examples of how trade schemes can support peace in war-torn or conflict-ridden regions (for instance, the EU, ASEAN and MERCOSUR). The MENA region is currently at the epicenter of major ravages triggered by civil wars in Iraq, Libya, Syria and Yemen. These, in turn, have led to the largest refugee exodus in recent history, thereby placing a strain on already struggling hosting countries such as Djibouti, Jordan, Lebanon and Tunisia. In addition, major oil
and gas exporters such as Algeria, Iran and the GCC countries are confronted with low oil prices, youth unemployment as well as undiversified economies. The magnitude of these circumstances needs to be acknowledged when providing a set of recommendations.

The following policy recommendations are geared towards making the MENA energy market operational. More specifically, these recommendations can be inscribed within the implementation of the PAEM in the electricity industry as well as within the creation of a suitable framework for the gas sector (ie, the suggested PAGM).

1. Investment in trans-MENA energy networks should be encouraged by all available means, including Foreign Direct Investment (FDI). Initiatives such as the Maghreb interconnection, EIJLLPST interconnection or the GCC interconnection are positive precedents. These projects blaze the way for MENA to create the necessary infrastructure to secure energy flows in the region. Such endeavours, may they be bilateral or even multilateral, can be the prelude to a well-connected MENA energy market through the progressive fusion of these schemes between the nations of the region involved.

2. As illustrated by the case of the EU, small groups of countries within a region can start successful undertakings that should hopefully attract neighbouring countries. These projects will take some time to come to fruition. However, some preliminary decisions should be taken in the meantime. In that vein, the World Bank has already identified the uillage of existing infrastructure; the promotion of bilateral connections; and the interconnections between transmissions systems as some of the quick wins that can be achieved under the prevailing market conditions.

3. Measures to foster the liberalization and opening-up of electricity and gas markets should be adopted. In that sense, a degree of political and infrastructure convergence is essential to establish a PAGM and to reinforce the existing PAEM. Action in the gas sector is particularly urgent as there is currently no shared vision for regional gas trade. This is all the more regrettable considering that the gas reserves located in the area have the potential to address many of the region’s needs: secure long-term fuel supply to promote affordable and reliable electricity, reduction of power outages, and diversification of the region’s energy supply.

4. It should therefore be explored whether the political willingness to enhance regional gas trade exists for the sake of all countries involved. This should most likely be the case of states that are grappling with low oil prices and are in dire need of diversifying their economies. Therefore, countries such as Algeria, Iran and the GCC countries are the ones with more at stake to push for the establishment of a regional gas market. Indeed, gas is their clearest alternative to achieve economic diversification. Counting with nations endowed with major gas reserves or that are major LNG exporters (such as Iran and Qatar, respectively) is already a promising default setting.

5. The creation of specialized MENA bodies to facilitate cooperation between TSOs and energy regulators should be encouraged. European TSOs and the European Agency for the Cooperation of Energy Regulators in the case of the EU, or independent institutions that serve as think tanks for generic energy policy issues such as the ASEAN Centre for Energy, are specialized institutions that play an essential role in the energy policy of their respective regions. Such entities are necessary to regulate the various aspects of energy integration between Member States. Such specialized bodies would directly contribute to the liberalization of the electricity and gas markets.

144 World Bank, ‘Middle East and North Africa region. Overview’, <http://www.worldbank.org/en/region/mena/overview#1> accessed 8 November 2017.

145 Similar recommendations are made in the ‘Analytical Foundation for Increased Pan-Arab Regional Gas Trade Report,’ of the World Bank’s Pan-Arab Regional Energy Trade Platform (P157314), 1 May 2017 (on file with author).

146 World Bank (n 12) 5.
For instance, TSOs are not only vital to address technical issues, but also to push policy-makers to take the required successive decisions to implement and advance the nascent electricity market in the MENA region and an eventual MENA gas trade market. Furthermore, such entities are the best suited avenues to centralize a specific aspect of energy between several participating Member States. An example of an initiative for energy integration is the South Asia Regional Initiative for Energy integration. South Asia could be an example of regional cooperation that MENA could emulate with its own specificities and characteristics. A way forward is to strengthen regional electricity and gas trade cooperation based on sharing the benefits for the region’s economic growth, political and social stability, energy security and sustainability.

5. CONCLUSION

While it is trite knowledge that several countries within the MENA region have successfully exploited their energy resources, there is sufficient evidence that the global landscape for energy production, trade and consumption is changing—changes which necessitate a re-evaluation of the way in which energy is traded in the region. These countries need to change their approach towards energy trade, not only to maintain a position of relevance in global energy trade, but also to ensure that the socio-economic benefits of energy trade are optimized at a regional level. It is also clear that a significant amount of cross-border cooperation is required for this, both from within and without the region.

The current high political climate and instability in the region has resulted in a situation where foreign investors are cautious about investing in the region. De-risking investment is imperative. Many investors would like to see their business model in the MENA region. New investments on power projects and cross-border transmission interconnections are necessary. Moreover, utilizing the existing interconnections is a must.

Furthermore, the PAEM would facilitate the greater utilization of existing power trade capacity before aiming at new investment on power projects. The benefits of such integration would be far-reaching and would immensely impact the socio-economic situation in the region by assisting in the further diversification of what has been, for many countries within the region, an economy heavily reliant on energy trade. This change in paradigm would hopefully occasion a change in policy, which would permit the consideration of greener energy, where the region has enormous potential, and this would go a long way to significantly contribute towards the improvement of the energy security situation within the region.

The advocated investment opportunities for the MENA region will in themselves be insufficient to prompt effective Pan-Arab energy trade. Nevertheless, if the right investments and project choices are made, financial frameworks could well be the ideal catalysts to galvanize the attractive investment climate that the MENA countries crave for. However, a clear and predictable regulatory framework—one subjected to the market rather than governmental decisions—emerges as the sine qua non requisite to attract foreign investment. Furthermore, only if the political will of, at least, a few regional champions subscribes, can an eventual economic injection lead to further regional energy ventures in the MENA region. Such projects could represent the building blocks towards the Pan-Arab Regional Energy Trade Platform. The World Bank can contribute to this effort by engaging international and regional development partners (eg, African Development Bank, Arab Fund for Economic Development, Islamic Development Bank as well as the EU and its partners).

While acknowledging the current lack of proper regional institutions and political consensus, the objective of the MENA countries should be to reach a cohesive energy policy for the MENA. Under the prevailing circumstances, the progressive integration of regional initiatives (ie, a bottom-up approach) seems more suitable than pressing for a MENA common position (ie, a top-down approach) for the creation of an internal energy market. Yet, without regional institutions, it will be difficult to enhance energy trade in the region. Although a harmonized position by the MENA region would undoubtedly be preferable to an array of discordant national measures, pushing for a MENA common position in such a delicate and versatile matter as energy might prove counter-productive, especially if the MENA countries involved lack the political will to do so.
Without establishing a proper institution such as a TSO or a regional regulatory institution, it may prove difficult to move the agenda forward.

Such a bottom-up approach may not lead to a truly internal energy market any time soon. Nonetheless, it offers the opportunity of securing reliable foundations for the project, given that a bottom-up approach is more likely to guarantee the effective commitment of the cluster of MENA countries willing to embark in such an undertaking. Although we propose intra-MENA cooperation to boost energy trade, the notion of an Energy Union, pioneered by the European Union, could be applied to other regions of the world, especially developing countries, which are in great need of achieving sustainable energy. For instance, in the same way that the EU is currently using an Energy Union to (1) decarbonize its economy by 2050, (2) to enhance its energy security, (3) to increase its energy efficiency, (4) to finalize its internal energy market, and (5) to invest in technology and innovation (these last two points being reasons to be hopeful), one could propose ways to create a MENA Energy Union, an African Energy Union, an ASEAN Energy Union, and a Mercosur Energy Union, to obtain similar benefits in the economies of those regions (namely MENA, Africa, ASEAN and Mercosur). This idea is all the more imperative if we consider that two thirds of greenhouse gas emissions come from energy. This would be a rather long-term aspiration for the MENA region, as prior effective and progressive regional integration remains indispensible.

There is reason for optimism in the MENA region because, in addition to large amounts of fossil fuels in some MENA countries, MENA is blessed with an abundance of renewable natural resources, and therefore has the potential to be the number one region in the world in renewables. Renewable energy and trade in (renewable) energy, in turn, could be the catalyzer for EU-MENA relations, for instance, by linking Morocco and Libya to the south of the EU. The MENA region could export electricity from renewables to the EU. Prices of renewables have gone down considerably in recent years and it is expected that the trend will continue in years to come. Thus, promoting renewable energy has the potential to result in regional cooperation. The region is endowed with copious solar irradiance and wind power also has significant potential. The chronic need for economic diversification, coupled with the resolution to press for energy sustainability, are further grounds to engage in the promotion of renewable energy. Further optimism comes from Goldman Sachs’s prediction that new wind turbines and solar panels worldwide will provide more energy over the next five years than US shale-oil production has over the past five years.147

The MENA region is bound to be at a crossroads shortly. The region may find itself in a similar juncture to that of Europe in the aftermath of World War II. Despite simmering with political turbulence, the Arab world has the basic tools to promote peace through trade, in this case via the anticipated Pan-Arab Regional Trade Platform. Such tools are the potential for the creation of a MENA single market based on cooperation, given their shared values, religion, language, culture and history. Indeed, energy cooperation marked the genesis of the EU, perhaps the most manifest success story in the world in terms of regional integration. If 28 European countries with such disparity of languages and cultures could come together to achieve shared prosperity, there is even greater reason to believe that the Arab world could and should do the same. All Arab countries share the same language, religion and culture. The MENA region has already a promising default setting with the PAEM in place as well as other multilateral schemes not only in electricity but also in the gas industry.

Moving forward, action should primarily be targeted towards regional gas trade, which is arguably at an embryonic phase, due largely to politics and prices distortions. The task of creating a market for regional gas trade is even more imperative considering that almost half of the world’s gas reserves are located in the MENA region.148 Thus, a Pan-Arab Gas Market should follow suit to the establishment of the PAEM. These two initiatives would streamline smoother cooperation in the electricity and gas sectors. In addition, the

147 C Martin, ‘Wind, Solar Power to Supply More Energy Than Shale, Goldman Says’, Bloomberg, 30 November 2015 <http://www.bloomberg.com/news/articles/2015-11-30/wind-solar-power-to-supply-more-energy-than-shale-goldman-says> accessed 8 November 2017.
148 World Bank (n 13).
region should focus on a bottom-up regional approach to overcome prevalent distrust in the region as a building block towards a vision of a PAGM. Given MENA’s geographical proximity to the EU, especially the North African countries, it seems a good idea to create alliances with it, but also with the African Union, Central Asia, South Asia and Russia.

Finally, it appears that Iran (arguably in the medium or long term) and Qatar are the best-placed MENA countries to provide liquefied natural gas supplies within the region. Pushing for a PAGM (even if Iran is not an Arab country) with these two nations on board would set a promising framework for regional gas trade.

Appendix 1

Table A1. Energy situation in the MENA region

Based on data provided by the World Bank and the International Energy Agency.
Table A2. Overview of Size of Electricity Market

| Country   | Electricity generation capacity (MW) | Peak electricity demand (MW) | Electrical energy sales (TWh) |
|-----------|-------------------------------------|-----------------------------|-------------------------------|
| Egypt     | 24,504                              | 22,079                      | 119.4                         |
| Iraq      | 8210                                | 9950                        | 26.9                          |
| Jordan    | 2979                                | 2482                        | 12.8                          |
| Lebanon   | 2312                                | 2499                        | 4.9                           |
| Libya     | 6006                                | 5759                        | 21.1                          |
| Palestine | 140                                 | 810                         | 3.9                           |
| Kuwait    | 12,579                              | 10,970                      | 49.3                          |
| Saudi Arabia | 49,138                          | 45,661                      | 211.1                         |
| Bahrain   | 3227                                | 2633                        | 11.0                          |
| Qatar     | 7881                                | 5090                        | 18.8                          |
| UAE       | 25,252                              | 18,111                      | 83.0                          |
| Oman      | 4100                                | 3594                        | 11.4                          |
| Algeria   | 11,332                              | 7718                        | 35.7                          |
| Morocco   | 5596                                | 4550                        | 23.3                          |
| Tunisia   | 3580                                | 2793                        | 12.9                          |
| Mauritania| 189                                 | 86                          | 0.6                           |
| Yemen     | 1334                                | 1125                        | 4.7                           |
| Sudan     | 2585                                | 1386                        | 6.0                           |
| Somalia   | 80                                  | 72                          | 0.3                           |
| Djibouti  | 130                                 | 63                          | 0.3                           |
| Comoros   | 10                                  | –                           | 0.1                           |

Source: World Bank, Middle East and North Africa Integration of Electricity Networks in the Arab World Regional Market Structure and Design (Report No: ACS7124, December 2013) 18. Data reflects 2010 values supplied by the League of Arab States (LAS).

Table A3. Domestic renewable energy targets in the MENA region

| Target | Date          |
|--------|---------------|
| Kuwait | 15% of electricity demand (generation) | 2030 |
| Saudi Arabia | 9.5GW of renewable energy | 2023 |
| UAE | 24% clean energy (including nuclear) in energy mix by 2021; Abu Dhabi—7% of capacity by 2020; Dubai—7% capacity by 2020 and 15% by 2030 (versus ‘Business As Usual’) | 2021, 2030 |
| Oman | – | – |
| Qatar | 1.8GW solar (16% of generation) by 2020; 10GW solar PV by 2030 | 20202030 |
| Bahrain | 5% of installed capacity | 2020 |
| Iran | 5GW wind and solar capacity | 2020 |
| Morocco | 42% of installed capacity by 2020; including 2GW solar & 2GW wind | 2020 |
| Jordan | 10% of generation | 2020 |
| Egypt | 20% of generation | 2020 |
| Yemen | 15% of generation | 2025 |
| Algeria | 20% of generation | 2030 |
| Tunisia | 25% of capacity | 2030 |

Source: Oxford Institute for Energy Studies, Advancing Renewable Energy in Resource-Rich Economies of the MENA (Oxford Institute for Energy Studies (OIES PAPER: MEP 15), September 2016) p. 9.