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Citation: Elfving S (2017) Emerging Framework of Energy Governance in the MENA Region. OGEL 3. 15pp.

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www.ogel.org

ISSN : 1875-418X
Issue : Vol. 15 - issue 3
Published : July 2017

This paper is part of the OGEL Special Issue on *Energy Law and Policy in the Middle East and North Africa (MENA)* prepared by:



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Oil, Gas & Energy Law Intelligence

Emerging Framework of Energy Governance in the MENA Region by S. Elfving

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Emerging Framework of Energy Governance in the MENA Region

by Dr Sanna Elfving¹

Abstract

This paper sets out to provide a deeper understanding of the regulatory framework to drive energy transformation processes in the MENA region and the barriers for change. The recent developments in a global scale have encouraged States to look towards alternative sources of energy to power their nation, with nuclear energy and renewable technologies. Technologies such as wind power and solar energy appear to be attracting interest in many countries and regions, and in the MENA region this is primarily solar energy. However, all States are at different stages of development and therefore, it poses a challenge for taking into consideration definitively the costs and efficiency of renewable energy technologies. This paper investigates the state of preparedness of the legal framework in the region in order to deploy renewable sources of energy to power these countries in years to come.

1. Introduction

The countries of Middle East and North Africa (MENA) have been estimated to have tremendous potential for deployment of a more sustainable, renewable-based supply of energy,² with one study estimating that the region may be able to supply 98% of their electricity generation with domestic renewable energies by 2050.³ Despite a number of studies describing potential transformation pathways from fossil fuels to renewable energy in the MENA region, there are also challenges which have been exposed by the region's fast-growing economies and rapidly rising demand in gas and electricity.⁴ Because of these challenges meeting the region's energy demand with renewable sources is likely to proceed at different speeds. Although most MENA countries have experience with large energy projects,⁵ renewables-based projects have very specific needs, particularly during the initial

¹ Dr Sanna Elfving is a Lecturer in Law at the University of Bradford, United Kingdom. Her research interests include regulation of unconventional energy in North America and Europe. The author would like to thank Mr Ajmal Maniar for research assistance and acknowledge that his LLB dissertation functioned as an inspiration for the author's interest in the regulation of renewable energy in the MENA region.

² Carlo Cambini and Donata Franzi, 'Independent regulatory agencies and rules harmonisation for the electricity sector and renewables in the Mediterranean region' (2013) 60 Energy Policy 179.

³ See eg Bernhard Brand and Thomas Fink, 'Renewable energy expansion in the MENA region: A review of concepts and indicators for a transition towards sustainable energy supply' (Asia-Africa Sustainable Energy Forum, Oran, 13-14 May 2014) <<http://epub.wupperinst.org/frontdoor/index/index/docId/5421>> accessed 1 September 2015

⁴ See Michal Nachmany and others, 'Climate change legislation in Saudi Arabia: An excerpt from the 2015 Global Climate Legislation Study: A Review of Climate Change Legislation in 99 Countries' <http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2015/05/SAUDI_ARABIA.pdf> accessed 14 September 2015. See also Mediterranean Energy Regulators, 'Regulations and Investments: Solutions for the Mediterranean Region (MEDREG Forum, Barcelona on 26 November 2014) MEDREG Papers No 2, 17 <http://www.medreg-regulators.org/Portals/_default/Skede/Allegati/Skeda4506-62-2015.5.12/MedregPAPERS2.pdf?IDUNI=x0zfb4s114zqoqmbj43tbw8255> accessed 14 September 2015.

⁵ eg the procurement of energy plants, the required reviews and approvals. See Squire Sanders, 'The Future for Renewable Energy in the MENA Region' <<http://www.cleanenergypipeline.com/Resources/CE/ResearchReports/The%20Future%20for%20Renewable%20Energy%20in%20the%20MENA%20Region.pdf>> accessed 14 September 2015.

research, development and demonstration phases.⁶ In addition, although renewable energy projects are likely to be similar in structure,⁷ the capital risk of renewable energy projects is high, and the investors may require additional guarantees such as feed-in tariffs to guarantee profits to renewable energy producers and to reduce the cost of renewable electricity to final consumers. Therefore, promoting renewable technologies entails a more active fiscal role by the State.⁸

Further, MENA countries are very diverse in terms of a number of factors, including their geographical location,⁹ existing energy markets and infrastructure, regulatory barriers, financial concerns, existing trading conditions, private sector involvement, the lack of international cooperation as well as sociocultural factors, and social and environmental outlooks.¹⁰ In addition, the practical aspects relating to large energy projects and renewable energy projects such as regulatory requirements, rules and procedures concerning bidding and procurement, the availability of financial incentives as well as real estate ownership are likely to differ in each individual country.¹¹

Growing demand for domestic electricity in the MENA region means that many of the region's countries, which have experienced a period of political instability,¹² have to make significant invests in new infrastructure in the future or face energy insecurity and programmed power cuts affecting households and industry which could lead to crippling production, civil unrest and weak economic recovery.¹³ In fact, energy insecurity is an existing problem in countries, such as Libya, which remains in turmoil, with two separate governments claiming to be legitimate.¹⁴ According to Mohamed and others, many areas in Libya were experiencing significant difficulties as a result of complete or relative absence of electricity.¹⁵ In addition to this, the impacts of the corporate and financial crises affecting global economies were also felt in the MENA region's wealthiest countries with the world's largest oil reserves,¹⁶ namely Saudi Arabia and Dubai,¹⁷ resulting in falling oil prices.¹⁸ From

⁶ Laura El-Katiri, *A Roadmap for Renewable Energy in the Middle East and North Africa* (Oxford Institute for Energy Studies 2014) <<http://www.oxfordenergy.org/wpcms/wp-content/uploads/2014/01/MEP-6.pdf>> accessed 29 September 2015.

⁷ Squire Sanders (n 5).

⁸ El-Katiri (n 6).

⁹ The region can be divided into three geographical areas, namely North Africa, East Mediterranean and the Gulf States.

¹⁰ See eg Brand and Fink (n 3); Walid El-Khattam and others, 'Establishing a Regional Mediterranean Electricity Market: Assessment and Strategy' (2013) 3(1) *European Energy Journal* 58, 63 <http://www.medreg-regulators.org/Portals/_default/Skede/Allegati/Skeda4506-13-2013.11.20/EEJ_1301_MEDRAG.pdf?IDUNI=x0zfb4s114zqoqmbjop43tbw2198> accessed 14 September 2015.

¹¹ Squire Sanders (n 5).

¹² The Arab Spring shook the region as regime changes and violence in some of the region's countries escalated the countries into or at the brink of a civil war.

¹³ For instance, in Egypt power supplies to industry have been increasingly rationed. See eg Anonymous, 'Eni discovers largest known gas field in Mediterranean' *The Guardian* (30 August 2015) <<http://www.theguardian.com/business/2015/aug/30/eni-discovers-largest-known-mediterranean-gas-field>> accessed 1 September 2015. For the situation in Libya, see Ahmed Mohamed, Amin Al-Habaibeh, Hafez Abdo and Sherifa Elabar, 'Towards exporting renewable energy from MENA region to Europe: An investigation into domestic energy use and householders' energy behaviour in Libya' (2015) 146 *Applied Energy* 247.

¹⁴ See eg Jukka Huusko and Juhani Saarinen, 'Välimereltä löydettiin jättimäinen kaasukenttä: Egyptistä saattaa tulla kaasunviejä myös Euroopan markkinoille' (*Helsingin Sanomat*, 31 August 2015).

¹⁵ Mohamed and others (n 13).

¹⁶ Nachmany and others (n 4).

¹⁷ See eg Kristian Coates Ulrichsen, 'The GCC States and the Shifting Balance of Global Power' Center for International and Regional Studies Occasional Paper No 6 (2010)

the energy security point of view, the MENA region's stability is also in the interest of its neighbours, such as the European Union (EU) since, for instance, Libya was once the EU's significant natural gas supplier.¹⁹ Indeed, the interest in renewable energy and energy demand in the MENA region is very much linked to the increasing cooperation between the EU and the MENA region, at least in the North African countries such as Libya, Egypt and Morocco.²⁰ The EU has turned its gaze on the MENA region in its attempt to find viable alternative energy supply options which could reduce its dependence on gas imports from Russia.²¹

This paper focuses on a review of existing energy policies deployed in the MENA region. The paper tracks the progress of integration of energy markets in the region, the region's renewable energy potential and various challenges relating to transformation of the region from fossil fuels to renewable energy which relate to each country's legislative, political, and financial environments. Second, the paper reviews the existing policies and support mechanisms for the regulation of energy in the region. The paper concludes that while the regulatory framework in the MENA region is in its early stages, various complex factors, including increasing energy needs and further advances in technologies such as solar energy and energy storage, are likely to drive future energy policies in the region.

2. Integration of energy markets in the MENA region: current state of development

According to El-Katiri, one way to make renewable energy investments in the MENA region more attractive to a growing number of investors is to encourage cross-regional trade in electricity.²² Although some elements enabling intra-regional trade exist in the region, due to a number of different generation technologies, diversity of demand and existing interconnected grids that would technically be able to support systematic trade in electricity,²³ in general such trade in the region has been modest,²⁴ and the MENA countries have been incapable of generating new investments in electricity directed at improving cross-border power exchanges both among themselves and between the MENA region and the EU.²⁵ Although the Mediterranean MENA countries have worked with the EU to form a regional energy cooperative in the context of the Euro-Mediterranean Partnership, no internal market exists between the MENA countries themselves.²⁶ As in other regional markets,

<<https://repository.library.georgetown.edu/bitstream/handle/10822/558292/CIRSOccasionalPaper6KristianCoatesUlrichsen2010.pdf?sequence=5>> accessed 14 September 2015.

¹⁸ See eg Brand and Fink (n 3);

¹⁹ See eg Huusko and Saarinen (n 14).

²⁰ See eg *ibid*; Anonymous, 'Eni discovers largest known gas field in Mediterranean' (n 13).

²¹ See eg *ibid*.

²² El-Katiri (n 6).

²³ As part of an effort to upgrade their electricity systems to a cross-regional standard, in 1988, Egypt, Iraq, Jordan, Syria and Turkey initiated a regional interconnection which was later joined by Lebanon, Libya and Palestine, enlarging the agreement to eight countries. Further, the Maghreb regional interconnection includes Morocco, Algeria and Tunisia, and the six Gulf countries are also interconnected. See El-Khattam and others (n 10) 67-68.

²⁴ In fact, opportunities for short-term energy sales have been realised in the region with some success and occasional neighbourly electricity trade exists eg between Morocco and Algeria, Iran and Iraq and some of their respective neighbours, and the Gulf States. See eg El-Katiri (n 6) and El-Khattam and others (n 10) 68.

²⁵ Currently, the EU-MENA power exchanges are limited to the interconnection between Spain and Morocco. See Cambini and Franzi (n 2) referring to Medring 2010.

²⁶ El-Khattam and others (n 10) 59. The EU's role in the region has increased due to fledgling cooperation between the EU and Northern African shores of the Mediterranean Sea. The Euro-Mediterranean Partnership

making more systematic use of the existing interconnections in the MENA region requires political will and utility market reforms, including adjusted power pricing rules and the creation of a regional electricity market.²⁷

The inability of the region to generate sufficient energy to trade is due to various obstacles relating to limited generation reserve margins, the lack of surplus generating capacity and generation fuel,²⁸ the absence of a harmonised regulatory framework with clear rules governing trade in electricity as well as trade systems that are generally limited to single State-owned entities, and the lack of synchronisation between interconnected systems which has often meant that part of a national grid system has to be isolated from the main grid to accept energy imports from another country.²⁹ Further obstacles for harmonised energy regulation and creation of an integrated regional market are the roles of authoritarian and monarchical regimes³⁰ which are able to exercise a significant veto power over any attempts to integrate energy markets.³¹ Indeed, in many MENA countries, governments and other domestic actors play a leading role in promoting adoption of rules, institutional change and vertically integrated utilities.³² Lastly, political instability in parts of East Mediterranean and North Africa may render the fledgling energy trade between certain interconnected countries unattainable for some years.³³

The energy mix of the region is primarily gas-based (approximately 70%).³⁴ Although estimated contributions are anticipated to shift in the future, these are rather small: less than 10% of the region's energy mix is anticipated to derive from renewable sources, 6% from oil, 3% from nuclear power and an unknown percentage from coal.³⁵ Interestingly, however, one study predicted that oil as a source of energy would be replaced partly by renewable energy, which in 2013 was estimated to contribute a maximum of 1% to the energy mix in the region, whereas oil was estimated to contribute approximately 10%.³⁶

However, the above estimations do not reveal the whole truth about the stage of development in deploying renewable sources of energy in the MENA region due to the diversity of the region's countries. Therefore, their energy systems are at diverse stages of renewable energy development, and this development is likely to advance in a nonlinear and heterogeneous manner.³⁷ Indeed, despite the energy sources in the region are currently dominated by oil and gas,³⁸ many of the North African countries have already started to deploy technological

was established in 1995 to promote the economic development of 12 Southern Mediterranean countries through regional trade liberalisation with the EU. See Cambini and Franzi (n 2); NadiaCampaniello, 'The causal effect of trade on migration: Evidence from countries of the Euro-Mediterranean partnership' (2014) 30 *Labour Economics* 223.

²⁷ El-Katiri (n 6).

²⁸ See El-Khattam and others (n 10) 69.

²⁹ *ibid*

³⁰ See Cambini and Franzi (n 2).

³¹ MEDREG Papers No 2 (n 4) 19.

³² *ibid*

³³ Before the civil war, Syria was able to make sales to Egypt and Jordan during summer when it has surplus generating capacity, while Jordan and Egypt can make sales to Syria in winter when they have surplus generating capacity. See El-Khattam and others (n 10) 68.

³⁴ *ibid* 60.

³⁵ *ibid* referring to Euro-Mediterranean Energy Market Integration Project, 'Overview of the Power Systems of the Mediterranean Basin' (2010).

³⁶ El-Khattam and others (n 10) 60.

³⁷ Brand and Fink (n 3).

³⁸ *ibid*

advancements which have made renewable energy sources increasingly sustainable.³⁹ In contrast, recent gas discoveries off the coast of Israel and Egypt⁴⁰ are thought to have an impact on energy exchanges and cooperation patterns in the region and continue the dominance of oil and gas.⁴¹ Further afield in the oil-rich monarchies of the Arabian Peninsula, the economy is almost exclusively based on the export of fossil fuels which are one of the major drivers of climate change.⁴²

3. Renewable energy potential in the MENA region

One of the studies investigating the potential transformation pathways from fossil fuels to a more sustainable, renewable-based energy supply in the MENA region includes a study by a private industry, the Trans-Mediterranean Renewable Energy Cooperation (TREC).⁴³ The TREC study investigated the feasibility of a renewable-based electricity supply scheme for the power systems between the EU and the MENA region.⁴⁴ The study, which received strong support from European, American, and MENA policymakers,⁴⁵ portrays an optimistic view of the renewable energy potential of the region.⁴⁶ According to it, the MENA countries may be able to supply 98% of their electricity generation with domestic renewable energies by 2050.

Furthermore, according to the TREC study, approximately 20% of the generated electricity in the region could potentially be exported to the EU.⁴⁷ The study identified a number of factors enabling the MENA countries to transform their energies from fossil fuels to renewable energy,⁴⁸ one of which was through a powerful intercontinental transmission system from North Africa and the parts of East Mediterranean to the EU.⁴⁹ Accordingly, such a system would enable MENA countries to increasingly replace their conventional mid- and base-load plants by wind, photovoltaic and solar power plants and help them trade electricity outside the region, primarily to the EU.⁵⁰ In the TREC study renewable electricity exports to the EU due to the higher renewable energy potential in the MENA region, specifically solar energy, were indeed, identified as a most promising driver for energy system transformation in the

³⁹ MEDREG Papers No 2 (n 4) 8. According to the renewable energy industry, renewable energy technologies have benefited from significant progress and decreasing costs in the recent decades. See eg Brand and Fink (n 3) referring to Trans-Mediterranean Renewable Energy Cooperation (TREC).

⁴⁰ In August 2015, an Italian energy group, Eni, discovered the largest known gas field off the Egyptian coast following other significant gas discoveries in the Mediterranean Sea in recent years. The deep sea area known as the Zohr-1X field in the Mediterranean Sea covers an area of about 100sq km and could hold as much as the 30 trillion cubic feet (849 billion cubic meter) of gas, equivalent to approximately 5,5 billion oil barrels. Eni has full concession rights to the area. See eg Anonymous, 'Eni discovers largest known gas field in Mediterranean' (n 13).

⁴¹ MEDREG Papers No 2 (n 4) 8.

⁴² Nachmany and others (n 4).

⁴³ DESERTEC Industrial Initiative was launched in 2009 to create large-scale solar and wind energy farms across the South and East Mediterranean, including the Sahara desert, to supply both domestic markets and the EU with renewable energy. See El-Katiri (n 6).

⁴⁴ Brand and Fink (n 3).

⁴⁵ El-Katiri (n 6). It has been argued that in general a growing network in the whole MENA region, consisting of private and institutional actors, including governments, support the implementation of renewable energy projects. See eg Brand and Fink (n 3).

⁴⁶ Brand and Fink (n 3).

⁴⁷ *ibid*

⁴⁸ *ibid*

⁴⁹ *ibid*

⁵⁰ *ibid*

region.⁵¹ Therefore, the industry advocates have called for a progressive adoption of a common legal and regulatory framework for renewable energies as a long-term goal for realisation of the EU-MENA electricity markets.⁵² In the long run, the falling technology costs of solar energy would reduce the costs of generation, making renewable electricity more competitive with fossil-fuel power.⁵³

Although it is generally thought that renewable sources of energy will become one of the drivers of the energy transition in the MENA region in the future,⁵⁴ it is still uncertain whether renewables will be able to provide a reliable source of energy in the long term because not many large scale solutions for energy storage are yet commercially available⁵⁵ to facilitate the use of electricity from sources of renewable energy which are almost without exceptions available intermittently.⁵⁶ Although renewable energy can be emitted from more than one source, the intermittent or seasonal availability of various renewable energy sources could be argued to function as a barrier to the wider deployment of renewable energy. It has been argued that the technical advantages in the field of solar energy make it the most attractive alternative source of energy, for instance, in the Gulf countries where approximately 90% of the land is un-populated and unexploited desert⁵⁷ and could, therefore, support the development of large scale solar power plants.⁵⁸

The abundant solar energy in the Arabic Peninsula constitutes a vast potential that can be used not only to reduce carbon emissions across the MENA region, but also to produce energy and potable water from seawater. It is rather perplexing that one less publicised benefit in the introduction of renewable energy in the Gulf region is that it would be able to power desalination plants to provide freshwater to the region,⁵⁹ considering that desalinated water is a large energy consumer in the Gulf region.⁶⁰ It has been argued that, for instance, the reliance on fossil fuels in Saudi Arabia is partly due to the country's heavy reliance on desalination plants to generate freshwater from seawater.⁶¹ Therefore, in addition to the traditional view that renewable energy technologies act a critical component in providing a clean and integrated solution to climate change, the development of new technologies has become widely seen as an opportunity to foster innovation while enhancing access to secure and affordable sources of energy.⁶²

Whereas solar energy may be an ideal alternative to fossil fuels only during the summer months in the North African countries such as Libya, other renewable energy options, such as

⁵¹ *ibid*

⁵² *ibid*

⁵³ *ibid*

⁵⁴ See eg *ibid* referring to Trans-Mediterranean Renewable Energy Cooperation (TREC); K Korte, *Government Promotion of Renewable Energy Technologies* (Springer 2011) 52.

⁵⁵ Tesla has recently introduced its electricity storage system for households, Powerwall, which can be charged using electricity generated from solar panels and stored for later use. The battery will be available commercially at the earliest in 2016. Tesla, 'Powerwall' <http://www.teslamotors.com/en_GB/powerwall> accessed 27 September 2015.

⁵⁶ M Sanz-Bobi, *Use, Operation and Maintenance of Renewable Energy Systems* (Springer 2014) 247.

⁵⁷ Abdmouleh, Alammari and Gastli (n 65) referring to Al Gobaisi and others 2010.

⁵⁸ *ibid*

⁵⁹ Mohamed and others (n 13).

⁶⁰ See eg Abdmouleh, Alammari and Gastli (n 65); Nachmany and others (n 4); Clefs CEA, 'Low-Carbon Energy' No 61 (2013) 92 <<http://www-liten.cea.fr/news/Keys61.pdf>> accessed 14 September 2015.

⁶¹ Nachmany and others (n 4).

⁶² Zeineb Abdmouleh, Rashid Alammari and Adel Gastli, 'Recommendations on renewable energy policies for the GCC countries' (2015) 50 *Renewable and Sustainable Energy Reviews* 1181.

wind and waste-to-energy may be more viable alternatives during winter.⁶³ There is, for instance, considerable wind potential in the Arabian Gulf from November to February.⁶⁴ Additionally, wind speed is higher during the summer months which coincide with the highest peak energy demand over the year.⁶⁵ However, although there is capacity in the Gulf countries to build offshore wind, currently, such projects are concentrated outside the Arabian Gulf.⁶⁶

4. Potential barriers for realisation of renewable energy in the MENA region

There are also potential barriers to a sustainable transformation of the regional energy systems which could explain the adherence to the status quo and the difficulty to implement renewable sources of energy in the MENA region.⁶⁷ For instance, the TREC study identifies legal uncertainty, limited market and land access, and institutional barriers as primary obstacles to renewable energy development.⁶⁸ Because many MENA energy markets are dominated by single, State controlled entity, which is usually involved in all aspects of energy production and distribution, national governments are often responsible for implementing renewable support mechanisms, enacting new regulatory frameworks, and deciding upon energy price reforms and energy efficiency standards.⁶⁹ However, it also appears that several countries in the region⁷⁰ have undertaken reforms in order to open up their energy markets to private sector involvement, particularly in relation to electricity generation from renewable sources.⁷¹

Indeed, one of the key barriers for the deployment of renewable energy throughout the MENA region is the lack of a clear regulatory framework.⁷² At the time of writing, only two MENA countries, namely Jordan and Morocco had adopted legislation, policies and financial incentives to strengthen renewable energy development.⁷³ The legal framework of Jordan⁷⁴ appears to be the most advanced in the region in terms of renewable energy investment and, in fact, it resembles closely that of the EU.⁷⁵ Research by Cambini and Franzi revealed that constraints, such as the lack of infrastructure investments due to low incentives, potential future developments in the MENA region should be directed at improving access to financial

⁶³ Mohamed and others (n 13).

⁶⁴ Abdmouleh, Alammari and Gastli (n 65).

⁶⁵ *ibid*

⁶⁶ Currently, the largest offshore wind project in the world is being built in the outer Thames Estuary, London by a consortium of three renewable energy companies, including Abu Dhabi-based Masdar. The project is estimated to have a capacity of 1GW from 278 wind turbines. See eg Abdmouleh, Alammari and Gastli (n 65) referring to Goebel 2012.

⁶⁷ Brand and Fink (n 3).

⁶⁸ The TREC study bases its findings on the evaluation of State ownership and State control of the electricity markets in the MENA region. See eg Brand and Fink (n 3).

⁶⁹ Brand and Fink (n 3).

⁷⁰ including Jordan, Algeria, Egypt and Abu Dhabi.

⁷¹ Brand and Fink (n 4).

⁷² in addition to tariff and off-take mechanisms. See Squire Sanders (n 5).

⁷³ Namely Jordan, Morocco and Dubai. Squire Sanders (n 5).

⁷⁴ together with Turkey and Croatia.

⁷⁵ Cambini and Franzi (n 2) considered harmonisation of the Mediterranean region's countries legal frameworks with EU standards. See also Squire Sanders (n 5).

resources and technical assistance which should be directed at the implementation of incentive measures.⁷⁶

It appears that both Jordan and Morocco are net importers of both oil and gas, which may be a factor in their decision to deploy renewable energies.⁷⁷ It could be argued that shortages in electricity and increasing prices for fossil fuels in those MENA countries that depend on energy imports could well function as drivers for a transformation towards more renewable energies.⁷⁸ However, existing regulatory frameworks only cover large scale developments such as utility-sized plants, but not necessarily individual photovoltaic and solar thermal systems installations which typically are small-scale projects located on rooftops of existing buildings or are integrated into buildings and are typically used for cooling and heating in residential, government, public and commercial buildings and industry.⁷⁹

However, in addition to the lack of necessary legal framework there are also financial barriers to renewable power development in the region.⁸⁰ It appears that investors still consider renewable energy projects relatively risky because of the high upfront cost for renewable technologies and the generally insecure market and investment conditions in the MENA region.⁸¹ The energy sector in the MENA region displays a significant subsidisation and cross-subsidisation of tariffs by larger industrial customers on behalf of smaller households, with retail tariffs generally well below the cost of supply.⁸² Approximately one-half of total energy subsidies in the region are estimated to account for by petroleum products exports, while the remainder represents subsidies on electricity and natural gas.⁸³ Because potential customers are paying energy prices that are well below economic costs, it is also difficult to find buyers: potential customers are unlikely to buy energy at international prices when they can purchase energy in the domestic market at subsidised prices.⁸⁴ The justification for subsidies is that increasing electricity prices from an adjustment of fuel prices into the energy industry would potentially add to the economic hardship of low-income households.⁸⁵ However, it has been suggested that international financial bodies such as the World Bank, the International Financial Corporation and the Islamic Development Bank could play a more influential role⁸⁶ in enabling MENA countries to provide their populations with cheap and affordable energy.⁸⁷ The absence of cost-reflective energy and electricity tariffs nevertheless makes the deployment of renewable energy in the region subject to economically distorting

⁷⁶ Cambini and Franzini investigated regulators' competences concerning energy efficiency and renewable sources of energy, renewables priorities, constraints countries expect to find deploying renewables, their needs, and eventual programming instruments in the MENA region.

⁷⁷ Jordan and Morocco are closely followed by Saudi Arabia and the United Arab Emirates. Although Qatar has adopted plans and programs, it has no legislators to instil investor confidence. Kuwait and Oman are in an early stage of the development cycle, while Yemen is struggling with continuing unrest and instability which in turn hampers the creation of the legal infrastructure needed to facilitate investment. See Squire Sanders (n 5).

⁷⁸ See also Brand and Fink (n 3)

⁷⁹ Abdmouleh, Alammari and Gastli (n 65) referring to Jeridi Bachelierie 2012 and International Energy Agency; Squire Sanders (n 5).

⁸⁰ Brand and Fink (n 3).

⁸¹ *ibid*

⁸² eg the opportunity cost incurred by producers and the import cost. El-Khattam and others (n 10) 71.

⁸³ Mohamed and others (n 13).

⁸⁴ El-Khattam and others (n 10) 71.

⁸⁵ El-Katiri (n 6).

⁸⁶ including the financing of more off-grid, rural electrification solutions. See eg El-Katiri (n 6).

⁸⁷ According to the Energy Sustainability Index of the World Energy Council from 2012, the MENA members of the World Energy Council were ranked at relatively low levels, between 44 and 88. MENA members of the World Energy Council are: Algeria, Egypt, Iran, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Qatar, Saudi Arabia, Syria, Tunisia and United Arab Emirates. See eg Brand and Fink (n 3)

policies, such as pre-determined targets for renewable energy and opportunities to create 'green' jobs for skilled workforce.⁸⁸

Further potential barriers for the acceptance of renewable energy strategies at the regime level in the MENA region include unwillingness of both political and industrial stakeholders to deploy new technologies.⁸⁹ Possible reasons for this could be the lack of information, general mistrust in renewable technologies, or simply strategic behaviour.⁹⁰ In the MENA countries, the political elite, fossil fuel industry and electricity utilities share common interests.⁹¹ This type of strategic behaviour is not distinctive for the region, but similar patterns exist on international forums and within multilateral negotiations when national governments try to enforce their interests in transnational support frameworks for renewable energies.⁹² Difficulties to reach consensus can be argued to be illustrated in the rejection of the Mediterranean Solar Plan roadmap in 2013,⁹³ which would have seen transmission of renewable energy through the territories of Southern EU Member States. However, the plan was opposed by Member States on the grounds of the high infrastructure investments they would have to make. Additionally, Member States saw little benefit in the scheme since it would have arguably turned them into mere energy transit countries for renewable electricity from North Africa.⁹⁴

Further barriers could be the competition of nuclear energy technologies or unconventional sources of energy (e.g. shale oil and gas).⁹⁵ Indeed, the success of shale gas exploration in North America has triggered deliberations as to whether the MENA region should also apply the unconventional technologies and set up pilot exploration or extraction projects for unconventional sources of energy.⁹⁶ It also appears that despite the Fukushima nuclear accident, the option of utilising nuclear is frequently discussed in MENA and receives strong support by nuclear industry initiatives worldwide.⁹⁷

Finally, according to Brand and Fink, other key factors shaping the development of renewable energy in the MENA region include factors which typically cannot be influenced by political, industrial or societal stakeholders such as demographic change, fluctuating fossil fuel prices, external shocks or climate change.⁹⁸ Such factors may mean that MENA countries become constrained to maintain their existing conventional energy supply strategies.⁹⁹ For instance, because fossil fuel prices are directly linked to questions of energy security in many MENA countries importing energy, population growth is seen an important external factor driving the energy demand.¹⁰⁰ Therefore, growing energy demand and imported fossil fuel could endanger the region's energy security.¹⁰¹ Additionally, external

⁸⁸ Renewable energies are often portrayed as a catalyst for wider economic benefits such as development of green' technologies and creation of skilled jobs. See *ibid* 21.

⁸⁹ Brand and Fink (n 3).

⁹⁰ *ibid*

⁹¹ *ibid*

⁹² *ibid*

⁹³ *ibid*

⁹⁴ Brand and Fink (n 3).

⁹⁵ *ibid*

⁹⁶ *ibid*

⁹⁷ *ibid*

⁹⁸ Such external pressures are typically taken into account in scenario assumptions for MENA energy system transformation. See Brand and Fink (n 3) referring to Dii (2013) and Fragkos and others (2012).

⁹⁹ Brand and Fink (n 3)

¹⁰⁰ *ibid*

¹⁰¹ *ibid* referring to Fragkos and others (2012).

shocks can impair the deployment of sustainable energy systems because political instability and conflicts generally lead to higher risk premiums and a generalised capital shortage.¹⁰² Post-Arab Spring Jordan is an informative example of various external pressures affecting energy supply in the MENA region in the past few years. Whereas before 2011 Jordan had operated most of its electric power plants with natural gas exports from Egypt, after terrorist attacks on pipelines in Egypt, Jordan's gas supply became severely disrupted.¹⁰³ Additionally, Jordan's electricity demand has increased rapidly due to the settlement of hundreds of thousands Syrian refugees in the country.¹⁰⁴ These events have resulted in Jordan to resort to imported diesel and fuel oil for electricity generation.¹⁰⁵ It remains to be seen whether these external pressures incentivise Jordan to explore domestic fossil fuel reserves or lead it to pursuit nuclear power projects.¹⁰⁶

5. Key principles governing the regulation of energy in the MENA region

It has been argued that in countries where the energy system is highly subsidised the main driver for renewable energy development are government policies because otherwise it would be challenging for renewable energies to compete with conventional sources.¹⁰⁷ This section discusses the role of independent energy regulators, unbundling and incentive mechanisms in the regulation of energy in the MENA region.

5.1 *Independency of energy regulators*

According to the Association of Mediterranean energy regulators (MEDREG), one of the most important regulatory principles in energy regulation in the MENA region, is the full independence from national and regional government, political organisations and any public and private body, including the industry.¹⁰⁸ This guarantees regulatory stability, freedom from political and industrial interests and avoids situations in which the decisions of the regulator are constantly modified or taken under influence.¹⁰⁹ However, it has also been noted that independence itself is not sufficient to ensure legal security and stability of operational conditions, but independence of the regulator needs to be supported by a sound legal framework, outlining the duties and powers of the regulator.¹¹⁰ Cambini and Franzi investigated the role of independent power producers, transmission tariff system and third party access regime in the MENA countries and found that each country was very divergent.¹¹¹ Such differences would arguably be less sensitive, if the countries had established a regulatory agency.

¹⁰² *ibid*

¹⁰³ Brand and Fink (n 3)

¹⁰⁴ *ibid*

¹⁰⁵ *ibid*

¹⁰⁶ *ibid*

¹⁰⁷ Abdmouleh, Alammari and Gastli (n 65).

¹⁰⁸ Mediterranean Energy Regulators, 'Good Regulatory Principles in the Mediterranean Countries: Glossary of core governance principles' (November 2014) 10 (MEDREG Principles) <http://www.medreg-regulators.org/Portals/_default/Skede/Allegati/Skeda4506-57-2015.1.9/4c_Med14-18GA-4c_INS.pdf?IDUNI=xms4sfjart21kizswfxmgbh46145> accessed 22 September 2015.

¹⁰⁹ *ibid* 10.

¹¹⁰ MEDREG principles (n 113).

¹¹¹ Cambini and Franzi analysed the electricity regulatory frameworks, as well as *ad hoc* provisions for renewables in the MENA region.

According to regulatory principles of the MEDREG, independent energy agencies should have the responsibility of monitoring the effective separation between competitive and regulated monopolistic activities, to ensure that no cross subsidies exist between generation, transmission, distribution and supply activities.¹¹² Therefore, effective unbundling of activities, the process under which generation, transmission and distribution are handled by different subsidiaries under a single holding company,¹¹³ can increase competition as monopolies are dismantled and new market actors may enter the market more easily.¹¹⁴ In the MENA region, for instance, Algeria, Egypt and Abu Dhabi have already taken first steps towards unbundling.¹¹⁵

Currently, the majority of all renewable energy projects in the MENA region are implemented with extensive government support.¹¹⁶ The benefit of this is that early entrant investors to the market are able to benefit from government support and assistance to deal with both common investment issues including land and company ownership rules, tax issues and industry specific issues such as grid connections and tariffs.¹¹⁷ However, national governments' influence on decisions made by energy companies on issues such as infrastructure investment, employment decisions or price setting processes, particularly when the government has ownership stakes in the utility can be reduced by the creation of an independent regulatory authority and therefore, separate regulators and decision-makers.¹¹⁸

With the exception of Morocco, Tunisia and Lebanon, all MENA countries have established an independent regulatory agency.¹¹⁹ However, with the exception of Jordan and Turkey, independent regulatory agencies in the region do not have either exclusive or shared competences in the field of energy efficiency and renewable sources of energy.¹²⁰ In fact, in other MENA countries, specific directorates within ministries are primarily involved in the definition and implementation of such policies.¹²¹ This could be explained by the fact that in general, the establishment of energy regulators has occurred before market liberalisation. Because the executive retains decisional power on a number of key regulatory aspects, which measure the effective independence and operational autonomy of a regulatory agency, this has limited the agencies' degree of formal independence in regulatory decisions.¹²² One possible explanation for this could be the relatively recent interest in the regulation of renewable energy.¹²³ A key message in Cambini and Franzi's research was nevertheless their argument that an independent agency performed better in terms of favouring access to electricity generation and transmission from renewable sources for new producers.¹²⁴

¹¹² MEDREG principles (n 113) 11.

¹¹³ Brand and Fink (n 3).

¹¹⁴ MEDREG principles (n 113) 11.

¹¹⁵ Brand and Fink (n 3).

¹¹⁶ Squire Sanders (n 5).

¹¹⁷ *ibid*

¹¹⁸ Cambini and Franzi (n 2).

¹¹⁹ *ibid*

¹²⁰ *ibid*

¹²¹ *ibid*

¹²² Cambini and Franzi measured credible regulatory commitments and independence of regulators in terms of utility unbundling, third party access to energy markets and the regulators' ability to set tariffs.

¹²³ Cambini and Franzi (n 2).

¹²⁴ *ibid*

5.2 Unbundling

The unbundling is one of the main aspects promoted at Euro-Mediterranean level in close relation with the adoption of incentive regulation and the definition of third party access regime.¹²⁵ With this regard, all countries in which an independent regulatory agency exists have unbundled the electricity sector or are expected to complete it in the immediate future.¹²⁶ The main characteristic of unbundling in MENA countries is the functional separation of generation, transport, and distribution activities, with the last two activities taking place under a monopoly regime.¹²⁷ Moreover, the coincidence between owner and manager of the networks, which are the State-owned companies, persists.¹²⁸ Typically, State-owned, and vertically integrated, companies own and manage the distribution network, with the sole exception of Jordan where the government and the independent regulatory agency manage the network.¹²⁹

Cambini and Franzi further analysed the third party access regime in the MENA region and found no clear information on third party access criteria or the role of regulatory agencies.¹³⁰ Their research found that MENA countries appear to be very similar in terms of third party access. However, at the same time this makes them very different from European countries since the MENA region is still characterised by the absence of third party access regime and of effective energy market exchanges.¹³¹ In order to stimulate private sector participation in electricity market and support schemes, governments in the region would be required to become very active in the current power market structure.¹³² Additionally, to reach their renewable energy targets, the governments should increase the amount of tenders for power generation activities and streamline these processes to guarantee certainty and swiftness.¹³³

However, while private participation in transmission and distribution is less common, most MENA countries allow for private participation in power generation activities.¹³⁴ It also appears that while the majority of MENA countries allow for private participation through utility supply, very few countries authorise renewable power generation for third party sales or export.¹³⁵ Another form of private participation is renewable energy electricity generation for self-consumption.¹³⁶ In order to encourage large scale auto-production, the regulatory framework should allow for renewable energy generating companies to feed any potential electricity surplus to the grid either for net metering or for sales at a preferential price.¹³⁷ Egypt, Jordan and Tunisia allow for private auto-production of renewable energy with the possibility of feeding excess electricity to the grid under net metering schemes.¹³⁸

¹²⁵ *ibid*

¹²⁶ *ibid*

¹²⁷ *ibid*

¹²⁸ *ibid*

¹²⁹ *ibid*

¹³⁰ Cambini and Franzi (n 2).

¹³¹ *ibid*

¹³² MEDREG Papers No 2 (n 4) 25.

¹³³ *ibid*

¹³⁴ *ibid*

¹³⁵ *ibid*

¹³⁶ *ibid*

¹³⁷ *ibid*

¹³⁸ *ibid*

5.3 Incentive mechanisms

El-Katiri has suggested two concrete ways to promote renewable energy within the MENA region's own economic context.¹³⁹ She sees the reforming of regional energy pricing mechanisms and bringing them in the private sector as the preferred option because this could enable energy regulators to address regional energy market distortions.¹⁴⁰ A secondary and less preferred option would be the introduction of fiscal¹⁴¹ and regulatory incentives, such as overall political support and access to sources of finance, which would reduce the cost disadvantage of renewables *vis-à-vis* fossil fuels.¹⁴² However, according to El-Katiri, such incentives are unlikely to resolve the problem of regional energy market distortions.¹⁴³

Incentive mechanisms in this context include feed-in tariffs, taxation measures, green certificates and tender mechanisms.¹⁴⁴ Feed-in tariffs are considered the main mechanism directed at incentivising energy sector's efficiency and renewable sources of energy, and their function is to accelerate investments on renewables technologies.¹⁴⁵ To improve energy efficiency, competitive tenders are used in the majority of cases, while feed-in tariffs are mainly used to incentivise renewables.¹⁴⁶ These mechanisms are managed primarily by the executive power.¹⁴⁷ Feed-in tariffs, as well as feed-in premiums, consists of general purchase obligations at regulated prices granted to operators of renewable electricity plants for the electricity that they feed into the grid.¹⁴⁸ Feed-in tariffs, thus, are 'preferential, technology specific and government regulated'.¹⁴⁹ While feed-in tariffs are a total price per unit of electricity paid to the producers, feed-in premiums are a bonus additional to the electricity market price.¹⁵⁰

While the MENA region's countries encourage investment, it has been argued that the practical application of their laws is not always straightforward.¹⁵¹ According to the law firm, Squire Sanders, numerous examples exist where development has terminated by practical barriers such as lengthy administrative processes despite the initial interest of the MENA governments to support renewable sources of energy, encourage investment and welcome foreign investment.¹⁵² This inevitably results in high transaction costs for investors even before any bids have been made.¹⁵³

¹³⁹ El-Katiri (n 6).

¹⁴⁰ *ibid*

¹⁴¹ Typical forms of fiscal policies include carbon taxes (to punish the use of fossil fuels in energy generation) and positive reward schemes. Punitive schemes can be revenue-neutral eg where governments use savings made and re-channel them as cash transfers or cross-subsidies to producers of alternative energy.

¹⁴² El-Katiri (n 6).

¹⁴³ *ibid*

¹⁴⁴ Cambini and Franzi (n 2).

¹⁴⁵ *ibid*

¹⁴⁶ *ibid*

¹⁴⁷ *ibid*

¹⁴⁸ *ibid*

¹⁴⁹ *ibid* referring to IEA/OECD 2008.

¹⁵⁰ *ibid*

¹⁵¹ Squire Sanders (n 5).

¹⁵² *ibid*

¹⁵³ *ibid*

5.4 Harmonisation of energy laws

It has been argued that the initiatives and investment projects, such as the EU-sponsored Mediterranean Solar Plan and the private solar industry initiative DESERTEC, demonstrate that cooperation between the EU and the MENA region requires a harmonised and transparent regulatory framework at the wider Mediterranean level.¹⁵⁴ Although projects like the DESERTEC have also received a significant amount of criticism¹⁵⁵ it appears that due to these joint initiatives the MENA countries with a shoreline in the Mediterranean have begun to harmonise their rules with the EU.¹⁵⁶ Harmonisation was one of the key features of renewable energy cooperation under the Mediterranean Solar Plan and participation required MENA countries to create new organisations, such as regulatory agencies for the energy sector management.¹⁵⁷ Under the Mediterranean Solar Plan programme improvement of rule of law and good governance in the MENA region was pursued through technical issues of cooperation.¹⁵⁸ However, as noted in section 4 the implementation of the programme was not pursued by the EU due to the opposition of its Southernmost Member States.

It has been suggested that the region-wide transformation to renewable energy in the MENA region requires regional harmonisation of renewable energy policies. However, rather than imposing a new framework imposed by external actors, such as the EU, such policy should be based on expanding the existing regulatory and institutional arrangements, where possible, since the most effective regulators, such as MEDREG, already have an established role in regulation locally.¹⁵⁹ More intensive cooperation and coordination between national legal frameworks in the MENA countries is also necessary for the creation a regional transmission network and systematic intra-regional trade in electricity.¹⁶⁰ To facilitate further cooperation, major developments are also required in terms of harmonised electricity market design and infrastructure policy. Over time national regulations will need to move towards a common regulatory framework that is either implemented on a national basis or through a regional regulatory body.¹⁶¹ However, this is a point of significant challenge for many existing regional markets. For instance, the EU continues to struggle with the integration of technical and regulatory standards for its internal energy market.¹⁶²

6. Conclusion

Despite the EU's decision not to proceed with the implementation of the Mediterranean Solar Plan, the EU clearly has an interest to strengthen its cooperation with the MENA region and promote further development of the regulatory framework in the region, since the EU consumes one-fifth of the global energy supply, making the trading bloc the world's largest

¹⁵⁴ Cambini and Franzi (n 2). Both initiatives focused on producing solar power in North Africa and exporting it to Europe.

¹⁵⁵ El-Katiri (n 6).

¹⁵⁶ Cambini and Franzi (n 2).

¹⁵⁷ *ibid*

¹⁵⁸ *ibid*

¹⁵⁹ El-Katiri (n 6); El-Khattam and others (n 10) 64.

¹⁶⁰ Inga Boie and others, 'Opportunities and challenges of high renewable energy deployment and electricity exchange for North Africa and Europe: Scenarios for power sector and transmission infrastructure in 2030 and 2050' (2016) 87 *Renewable Energy* 130 DOI:10.1016/j.renene.2015.10.008.

¹⁶¹ El-Khattam and others (n 10) 64.

¹⁶² *ibid*

importer of energy.¹⁶³ Because the EU is unable to produce sufficient energy for its needs, it must import energy from outside,¹⁶⁴ and the MENA region seems to have abundance of renewable energy, especially solar energy. Although there have been arguments that the cooperation between the EU and the MENA countries located in the Mediterranean region means that the latter are forced to harmonise their energy markets to supply renewable electricity to the EU,¹⁶⁵ such a cooperation is likely to be mutually beneficial. However, it appears that the cooperation with the EU plays only one important factor in pushing energy transformation in the MENA region. There are a number of significant factors driving the regulation of renewable energies in the region including the availability of suitable technologies such as energy storage. Additionally, the MENA countries have different interests to develop renewable energy: whereas those countries with abundant sources of fossil fuels may not be so keen to promote deployment of renewable sources of energy, others may be more reliant on imported energy and may therefore, be more interested in developing renewable energies. Further, some Northern African countries, such as Morocco, have already made considerable progress on its way to deploy renewable energy and it further has a robust institutional framework to support renewable energy technologies diffusion process.¹⁶⁶ Nevertheless the development of the national regulatory frameworks is in its early stages, and various complex factors, including increasing domestic energy needs and political realities within the region, are likely to drive future energy policies in the region.

¹⁶³ Commission, 'The European Union Explained: Energy Sustainable, secure and affordable energy for Europeans' (2012) 3.

¹⁶⁴ *ibid*

¹⁶⁵ Cambini and Franzi (n 2) referring to Radaelli, 2003; Lavenex and Schimmelfennig, 2009.

¹⁶⁶ Diala Hawila and others, 'Renewable energy readiness assessment for North African countries' (2014) 33 *Renewable and Sustainable Energy Reviews* 128 DOI:10.1016/j.rser.2014.01.066.