

THE FUTURE OF THE EU AND NORTH AFRICA: RENEWABLES?

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To Burhim, I know you are still watching me over from wherever you are ...

ABSTRACT

THE FUTURE OF THE EU AND NORTH AFRICA: RENEWABLES?

The EU with its clean energy targets and advanced technology constitutes a perfect match in theory with renewable energy rich south Mediterranean (Algeria, Egypt, Libya, Morocco, Tunisia), which has not been the case yet. Further collaboration in the field of renewable energy between them has not been realized. The thesis argues that the EU's one-size-fits-all approach alienates these states and slows down the process. Bilateral agreements based upon projects may be a solution to overcome this problem. Although among three of the initiatives handled, UfM is the closest to this solution there are still challenges caused by the states themselves. Energy subsidies, political uprisings, superiority of conventional resources and barriers due to financial and regulatory shortcomings are just some analyzed in the scope of this thesis. All of the problems were elaborated on individually using examples from the five countries mentioned above. Moreover two large-scale projects (Desertec and the MSP) were examined as case studies to bind the theoretical discussion to real-life situations. Although they were project-based initiatives the specific needs of the relevant countries were not taken into account again, which lead to their failure. Before reaching this conclusion, energy outlook and regulations related to renewables of the five states were analyzed in detail. After that the evolution of the EU – North African relations were dwelled on with emphasis on the renewables. Before the conclusion, future prospect of this relation was given.

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ÖZET

AVRUPA VE KUZEY AFRIKA’NIN GELECEĞİ: YENİLENEBİLİR ENERJİ?

AB'nin yenilenebilir enerji hedefleri ve gelişmiş teknolojisi, yenilenebilir enerji kaynakları bol olan güney Akdeniz ülkeleriyle (Fas, Cezayir, Mısır, Libya, Tunus) teoride karlı bir ortaklığa işaret etmektedir. Fakat bu ortaklık günümüzde beklenen seviyeden çok uzakta kalmıştır. Bu tezin argümanı AB'nin tüm bu ülkelere aynı yaklaşımı uygulamasının onların ortaklığa yanaşmamasına neden olduğu yönündedir. Proje bazlı ikili ortaklıklar bu problemin aşılmasını sağlayabilir. Ele alınan üç büyük girişim içerisinde UfM bu hedefe en yakın olmasına rağmen ülkelerin kendilerinden kaynaklı engeller süreci yavaşlatmaya devam etmektedir. Devletlerin enerji sübvansiyonları, siyasal çalkantılar, alışlagelmiş enerji kaynaklarının önemini koruması, ekonomik ve bürokratik bariyerler bu tezin incelediği bazı engellerdir. Bütün bu sorunlar ayrı ayrı ülke bazında örneklerle ele alınmıştır. Bununla birlikte, iki büyük ölçekli proje olan Desertec ve MSP vaka incelemesi olarak ele alınarak teori ve pratik arasında bağ kurulmaya çalışılmıştır. Proje bazlı girişimler olmakla birlikte, girişimlerin başarısız olmasına neden, ilgili ülkelerin spesifik ihtiyaçlarının değerlendirmeye alınmamasıdır. Bu sonuca ulaşmadan önce beş ülkenin yenilenebilir enerji kaynakları ile ilgili veriler ve düzenlemeler detaylı olarak analiz edilmiştir. Ardından yenilenebilir kaynaklar üzerine vurgu yapılarak AB – Kuzey Afrika ülkelerinin ilişkilerindeki gelişim incelenmiştir. Son olarak da bu ilişkinin gelecekteki görünümü hakkındaki çıkarımlar ortaya konmuştur.

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ABBREVIATIONS

ACER	Agency for the Cooperation of Energy Regulators
ANME	The National Agency for Energy Conservation
CDER	Center for the Development of Renewable Energy Sources
CDM	Clean Development Mechanism
DII	Desertec Industries Initiatives
EEC	European Economic Community
EEU	Energy Efficiency Unit
EIB	European Investment Bank
EMEF	Euro-Mediterranean Energy Forum
EMP	Euro-Mediterranean Policy
ENP	European Neighborhood Policy
ENTSO-E	European Network of Transmission System Operators for Electricity
EU	European Union
FDI	Foreign Direct Investment
FIT	Feed-in Tariffs
GDF	Gas de France
GDP	Gross Domestic Production
HVDC	High Voltage Direct Current
IEA	International Energy Agency
IPP	Independent Power Producers
IRENA	The International Renewable Energy Agency
ISCCS	Integrated Solar Combined Cycle System
LNG	Liquefied Natural Gas
MASEN	Morocco Agency for Solar Energy
MEE	Ministry of Electricity and Energy
MENA	Middle East North Africa
MDBs	Multilateral Development Banks
MDGs	Millennium Development Goals
MPCs	Mediterranean Partnership Countries
MSP	Mediterranean Solar Plan
MW	Megawatt
NREA	New and Renewable Energy Authority
PIIGS	Portugal, Ireland, Italy, Greece, Spain
PPA	Power Purchase Agreements
PV	Photovoltaic
REAOL	Renewable Energy Authority
RES	Renewable Energy Sources
STEG	Société Tunisienne de l'Electricité et du Gaz
UCTE	The Union for the Co-ordination of Transmission of Electricity
UfM	Union for the Mediterranean

CHAPTER 1

Introduction

Qi (气) is defined as a life force and energy flow that sustains all living beings. The ancient Chinese believed that qi “permeated everything and linked their surroundings together.”¹ Earth, the only known home for people, is shaped and altered by humans’ energies. In other words, constant change through energy is fundamental; it affects and connects people around the world. On March 11, 2011 at 2:46 pm Japan experienced one of the most powerful earthquakes leading to a tsunami and the Fukushima nuclear disaster. In the following days, massive waves deprived nuclear reactors of cooling water and damaged plants released radiation. Power shortages and loss of industrial production interrupted the global supply chain and lead to the ‘global nuclear renaissance’.² On January 20, 2011 in the town of Sidi Bouzid Tunisia, a young fruit seller named Mohamed Bouazizi poured flammable liquid and set himself on fire in front of the city hall. He was protesting against police’s constant harassment and local officials’ recklessness. This triggered the chain of events resulting in the end of Ben Ali’s 23-year rule, ten days after Bouazizi died.³ This incident was followed by Tahrir Square protests in Egypt, demonstrations in Benghazi, Libya and Yemeni revolution, later commonly known as the Arab Spring. Shock signals were sent to

¹ Manfred Porkert, *The Theoretical Foundations of Chinese Medicine: Systems of Correspondence* (Cambridge: M.I.T. Press, 1974) p. 78.

² Daniel Yergin, *The Quest: Energy, Security and the Remaking of the Modern World*. (London: Allen Lane, 2011) p.2.

³ Raina Abouzeid, “Bouazizi: The Man Who Set Himself and Tunisia on Fire,” *Times Magazine*, January 21, 2011. Available at: <http://www.time.com/time/magazine/article/0,9171,2044723,00.html>

global energy market, as the spreading unrests ended authoritarian regimes in countries that provide 40 percent of oil used in the world.⁴ Hence, these two almost concurrent incidents had one thing in common: igniting insecurity of energy supply. Here energy security is measured through the reliability, affordability of supply and the friendliness of the environment.⁵ The regular and smooth access to supplies with a sustainable price is the components of a trustworthy relationship between the demander and supplier sides. Both have to ensure the uninterrupted flow of energy sources and commit to the agreements signed.

The ancient name for the Mediterranean is Mare Nostrum, the Latin for ‘our sea’, and the idea of Mediterranean as a regional entity derives from this term. Looking back to the Roman Empire, the area was actually united culturally and politically for a long time. However this is not the case any longer. The cultural, economic and political legacy has been forgotten and replaced with conflict, rivalry and fragmentation. Through the rise of Christianity, Islam and nationalism, several conquests, have all added to the process. Hence the unitary Mediterranean in the political sense has ceased to exist.⁶ According to Balta, today there are six Mediterraneans to deal with: the EU member in the west; Turkey; the Balkans; the Arab East; Israel; and North Africa;⁷ all shaped by different motives ranging from inter-ethnic conflict to colonialism. Hence, due to their historical, economic and political means, all the states have different paces of development. In this thesis, the relations between the ‘advanced’ European and ‘backward’ North African countries, especially in the energy field are discussed. Although both of the regions are taken as a single entity in this thesis, it is a known fact

⁴ Daniel Yergin, *The Quest: Energy, Security and the Remaking of the Modern World*. (London: Allen Lane, 2011) p.2.

⁵ Brenda Shaffer, *Energy Politics*. (Pennsylvania: University of Pennsylvania Press, 2010) p. 93

⁶ Pere Vilanova, ‘What if the Mediterranean would not or does not exist? Exploring heterodox hypothesis’ Paper presented at the Fourth Mediterranean Social and Political Research Meeting, Florence & Montecatini Terme 19 – 23 March 2003, organized by the Mediterranean Programme of the Robert Schuman Centre for Advanced Studies at the European University Institute.

⁷ Paul Balta, “Cultural Dialogue in the Euro-Mediterranean Partnership,” *IEMED Annual Articles*. Available at: <http://www.iemed.org/anuari/2009/aarticles/a293.pdf>

that the countries of North Africa are deeply divided. The EU is also dealing with the disagreements of its member states while also trying to implement its norms in other territories. In terms of North Africa, the European Neighborhood Policy, Euro-Mediterranean Partnership and Union for the Mediterranean are just three of such attempts. The deep fragmentation of the region, preeminence of state interests and many other reasons that are discussed at length throughout the thesis have led to the failure of these initiatives and the integration between the two shores could therefore not be realized.

This thesis considers the reasons for the lack of full collaboration in the energy sector. The argument is that the EU's one-size-fits-all approach harms the process and bilateral cooperation that can evolve first to sub-regional and then to regional levels can be a better solution. This thesis begins with the current energy outlook of North Africa, followed by the second chapter, which discusses challenges faced by this region. Throughout the thesis North Africa and South Mediterranean have been used interchangeably to indicate Algeria, Egypt, Libya, Morocco, and Tunisia. The energy subsidies, supremacy of fossil fuels over the renewables, the lack of infrastructure, and political turmoil are the chronic problems of the five countries that are elaborated on. Three of the states are fossil fuels exporters and due to the climate and wind regime, all have renewable energies potential. The proximity of these countries to Europe and the great renewable potential are the reasons why these states were examined in this thesis. Even though they possess various renewable resources, the EU has the technology to make efficient use of these sources. Hence, the collaboration between the two shores seems profitable. Chapter three analyzes the cooperation between the two regions. It specifically looks into the EMP, ENP, and UfM as three of the institutionalized attempts of the EU to develop closer integration. Emphasis was placed upon the initiatives to boost the renewable energy cooperation and the causes for failure to achieve the goal. The following chapter discussed the barriers to the renewable energies relations between North Africa and Europe. The financial and regulatory obstacles were examined and the Mediterranean Solar Plan and DESERTEC were used as two case studies that indicate the problems with large-scale projects. Lastly, the future prospects were mentioned to give a glimpse of the possible scenarios. Some solutions are also provided especially for the financial obstacles. The scope of the thesis did not allow a comprehensive discussion of the following issues.

The issue of nuclear energy as an alternative to the RES was not discussed, as there is a slim chance that all the states of South Mediterranean can acquire the nuclear technology in the coming years. Although they have considered it as a profitable alternative to fossil fuels, acquiring the technology is not easy. To begin with, the member states of the EU would not be willing to share the information, since the technology can also be used to build nuclear weapons. Even if the technology is acquired, the North African countries have to attract huge amounts of FDI, which looks difficult if they as remain authoritarian regimes in the near future. In addition, solar and wind energy were the only two RES that were emphasized. The hydropower and biomass as the other alternatives for sustainable and clean energy production were not mentioned in length. Since solar and wind are untapped energy resources that can flourish through large-scale projects, greater consideration was given to them. The role of Turkey in this region and in the negotiation process was also not mentioned, especially since during the last few years Turkey's influence has deteriorated and the zero-problems with neighbors strategy has failed. And in the RE field in particular no significant relations were developed. The EU is most certainly a more effective actor in this region compared to Turkey. Finally, energy is a topic that changes and evolves everyday. New agreements are signed, some others end and politics get involved in the flow of energy constantly. While the most recent news is followed throughout the thesis-writing period, some developments may have been overlooked.

CHAPTER 2

Current Energy Situation in North Africa

This chapter elaborates on the current situation of North African countries' energy position and the challenges faced while developing RE technologies. In the first part the energy outlook of Algeria, Egypt, Libya, Morocco, and Tunisia are discussed. These states can be divided roughly into two categories: energy importers and exporters. Libya and Algeria have oil and natural gas reserves whereas Morocco and Tunisia are deprived of both. Egypt was an oil and natural gas exporter country but today it only exports the latter due to its increasing demand. Each of the countries' renewable energy potential and projects to encourage the rising share in the energy mix are discussed in this chapter as well. The second part of this chapter considers the three pressing problems faced by these states: energy subsidies, preference of conventional resources over RES and lack of infrastructure. Some plausible explanations regarding why the countries choose to subsidize their energy prices and favor fossil fuels over RES are given. Before proceeding with the plan above, the next paragraph explains the concepts of rentier state and Dutch disease.

Before analyzing the countries, one point shall be made. For years the policy-makers have presumed that if a country has natural resources and exports them the state and citizens prosper. The logic behind was simple: significant profits are gained via natural resource trade, which leads to investments in other areas and increasing employment. In the 1990s empirical research has indicated the opposite: being natural resource rich is actually a curse.⁸ Especially for many MENA countries, natural

⁸ Christa N. Brunnschweiler and Erwin H. Bulte, "Economics: Linking Natural Resources to Slow Growth and More Conflict," *Science* 320, no. 5876 (2008): 616-617.

resource revenues are the only source of income and the development of other industries are prevented as a result. In some cases, due to the large revenues the national currency's value raises and the imported goods become cheaper. Hence, local industries are not able to compete and they prefer to specialize in the natural resources sector as well. The economies become very vulnerable to price fluctuations, the more they depend on this sector.⁹ This situation is called the 'Dutch Disease'¹⁰, due to the dominance of the hydrocarbon sector, the expansion of other sectors is limited and diversification is almost impossible. In addition, the lack of good governance makes way for corruption creating a vicious cycle. Eventually, the governments' ability to deliver the necessary services fall, so does the well being of the citizens. Eventually they become rentier states. The tables below (Table 1 and 2) can be interpreted in the light of this information. The population growth of this region and the rising energy demand makes the collaboration of the two shores more urgent. However, considering the figures, GDP growth solely based on exports would be harmful for the southern Mediterranean countries, hence the cooperation shall be based upon the provision of sustainable growth. As mentioned before, the development of renewable energy technology is the best candidate in this sense. Especially Algeria and Libya have particularly large reserves of oil and natural gas, making them potential candidates for the 'resource curse'. Considering also all the countries' history of colonization, traumatic independence process and huge amounts of debt, overdependence on natural resources revenues is a concomitant. The next section gives a detailed analysis of the North African countries' energy outlook.

⁹ Price Water House Coopers, "100 percent renewable electricity: A roadmap to 2050 for Europe and North Africa," Available at: www.pwc.com/sustainability

¹⁰ Dutch disease is the negative impact on an economy of anything that gives rise to a sharp inflow of foreign currency, such as the discovery of large oil reserves. The currency inflows lead to currency appreciation, making the country's other products less price competitive on the export market. It also leads to higher levels of cheap imports and can lead to deindustrialisation as industries apart from resource exploitation are moved to cheaper locations. The origin of the phrase is the Dutch economic crisis of the 1960s following the discovery of North Sea natural gas.
<http://lexicon.ft.com/term?term=dutch-disease>

Table 1: South West Mediterranean Population Prospects (million)¹¹

	2005	2010	2020	2030	Annual growth per year
Algeria	33	35	41	45	1,2%
Egypt	74	81	94	106	1.4%
Libya	6	6	8	8	1.4%
Other South West (Morocco & Tunisia)	40	43	47	51	1%

Table 2: South West Mediterranean's GDP (trillions of US dollars, PPP)¹²

	2005	2010	2020	2030	Annual growth per year
Algeria	206	278	474	664	4.8%
Egypt	120	138	172	202	2.1%
Libya	44	46	52	60	1.3%
Other South West (Morocco & Tunisia)	65	75	95	115	2.3%

¹¹ United Nations, *World Population Prospects: 2006 Revision* (New York: Population Division, Department of Economic and Social Affairs, UN, 2006) p.49.

¹² Ibid. 51

2.1 North African States' Energy Outlook

This section starts with a brief characterization of the five (Tunisia, Morocco, Algeria, Libya, Egypt) North African countries, followed by a discussion of the region's energy outlook with an emphasis on the RES potential. The tables above indicate the population, GDP and energy demand growth that have led to greater energy production and imports. Out of the five countries Tunisia and Morocco are net energy importers whereas Algeria and Libya are net exporters and Egypt is an oil importer and natural gas exporter. Although it has some oil and gas reserves, Tunisia has been an energy importer since 2000. Throughout the 2000s its two main primary energy resources were petroleum products (around 50 percent) and natural gas (around 40 percent).¹³ The net electricity demand has been rising about 5 – 6 percent every year and it is mainly based on natural gas (95 percent). RES' contribution is still negligible; in 2008, 3313 MW was produced mostly by the thermal power plants, hydroelectricity, and wind power. Nuclear power has also become an option for Tunisia: since 2006, several collaboration accords have been signed with France.¹⁴ Another energy importer in this region is Morocco; around 98 percent of its primary energy supply is being purchased. It has no conventional natural gas and oil reserves. Like Tunisia, most of its electricity demand is met via petroleum products (60 percent) and coal (25 percent). Here again, RES are just supplying 2 percent of the need, which is around 5292 MW, and thermal power plants, hydroelectricity and wind farms are the main sources. Coal is going to keep its place as one of the main fuels of power generation in the coming decades, but in order to diversify its supplies feasibility studies for nuclear energy in Sidi Boulbra have been conducted.¹⁵ This was a general profile of the two energy importers among the Maghreb

¹³ Nikolaus Superberger and Laura Führer, "Integration of renewable energies and nuclear power into North African Energy Systems: An Analysis of energy import and export effects", *Energy Policy* 39 (2011): 4459.

¹⁴ Reuters, "France seals nuclear, aid deals with Tunisia," Available at: <http://uk.reuters.com/article/2009/04/23/idUKLN941296>

¹⁵ Sammy Salama, "Moroccan nuclear energy program gets boost from Russia," *WMD Insights*, Available at: http://www.wmdinsights.com/I11/I11_AF1_MoroccanNuclear.htm

countries; the energy exporters Algeria and Libya will be discussed in the following paragraph.

Algeria is blessed with reserves of oil and natural gas, but these resources can also be seen as a curse for this country. Its GDP is much too dependent on gas and oil exports.¹⁶ For instance, the fertile soils in the northern part of the country are not cultivated, and the agricultural sector accounts merely for 7.6 percent of the GDP.¹⁷ Hence, the green energy and nuclear sectors are underdeveloped. Libya's energy mix is dominated by oil and natural gas as well, but its energy demand is rising in an accelerated rate that leads to many blackouts. The state has tried to curb the dominance of oil by constructing new plants fired by natural gas.¹⁸ Like Tunisia, it seeks international support for its nuclear plants and in 2006 the first agreement with France was signed.¹⁹ The same attempts are not available for RES, again the same reasons apply to this rentier state.

The last state to be discussed about is Egypt, which has a different category as an oil importer and gas exporter. Although until the late 1990s Egypt was a self-sufficient country in terms of oil consumption, the decline in production, and growth in domestic demand have reversed this condition. The discovery of large gas reserves has

¹⁶ Hydrocarbon exports constituted almost 98 percent of total exports in 2007 and these sectors accounted for 46 percent of the GDP. African Development Bank and OECD, "African Economic Outlook 2008," Available at: http://www.oecd.org/document/33/0,3343,en_2649_15162846_39963489_1_1_1_1,00.html

¹⁷ African Development Bank and OECD, "African Economic Outlook 2008," Available at: http://www.oecd.org/document/33/0,3343,en_2649_15162846_39963489_1_1_1_1,00.html

¹⁸ Nikolaus Supersberger et. al. "Energy systems in OPEC countries of the Middle East and North Africa. System analytic comparison of nuclear power, renewable energies and energy efficiency." Available at: http://www.ps.boell.org/downloads/Wuppertal_Institut_Energy_Systems_OPEC_Countries.pdf

¹⁹ World Nuclear Association, "Emerging Nuclear Energy Countries," Last Modified: November 2013, Available at: <http://www.world-nuclear.org/info/inf102.html>

quadrupled its production over the last decade and around 15 billion m³ have been exported in the same period.²⁰ Domestic electricity consumption has been on the rise, increasing at an average of 7 percent in the last 10 years. Egypt currently has two nuclear research reactors and aims to construct the third by 2015.²¹ It is not certain how this plan will turn out after the Arab Spring. This comment is actually valid for all the other countries that are discussed here; the uncertain political situation and the rise of new parties have complicated the short-term energy plans. The continued economic expansion and resistance to curb demand growth can eventually lead to energy shortages and disrupt the development. Hence, this region's collaboration with the EU is inevitable if they want to curb their energy dependency or diversify their energy mix using the RES. In the following paragraphs, the energy outlook of the northern and southern shores of the Mediterranean is discussed before proceeding with the condition of the EU – Northern African energy cooperation in the subsequent section.

As distinct from the previous paragraph, the energy trends of the Northern Mediterranean EU countries and Maghreb states will be reviewed together to indicate the urgency of closer cooperation between the two shores. To begin with this region accounts for 8 percent of the energy demand in the world and on average the region's dependence will grow by 2 percent per annum. Oil and natural gas constitute a big share in this rising energy demand. Moreover, it seems that natural gas will overtake oil after 2025, accounting for 36 percent of the need at 500 Mtoe.²² With technological advances, several policies and incentives, especially non-hydro renewables are expected to have a bigger share in the energy mix. Considering this region's vulnerability to devastating results of climate change, switching to green energy options would be a wise move. Traditionally, the Mediterranean region has been blessed with RES like biomass and hydropower. In the recent years solar and wind have also increased their

²⁰ Sameh Fahmy, "National Oil and Gas Strategy 2000," Available at: www.ngv2006.com.

²¹ Ministry of Electricity and Energy, "Egyptian Electricity Holding Company, Annual Report," Available at: <http://www.moe.gov.eg/english/Takareer/2009-2010.pdf>

²² Observatoire Mediterranéen de L'Energie, *Mediterranean Energy Perspective 2011*, (OME: Nanterre, 2011): 31.

share in the energy production mix, although most of them are used in the residential sector. Thus, the enormous potential can be used if capital, increased regional collaboration and stronger political will are available. In addition, North and South Mediterranean countries have common energy challenges and complementary assets: the former having the know-how while the latter the potential to be developed. In the south, the cost of producing electricity from photovoltaic solar technology is expected to be around 10 cents (US), which is profitable.²³ At both sides of the Mediterranean, countries want to take part in this energy transition and partnerships among them can lead to a win-win situation. The coming section analyzes the five North African countries' energy situation individually.

2.1.1. Algeria

Algeria is blessed with fossil fuels and renewable energy resources. Oil was first discovered in 1956 and the national council estimates a vast hydrocarbon potential as the state-owned Sonatrach and foreign companies have made huge oil and gas discoveries in the recent years. The proven reserves are around 11.3 billion barrels, while the estimate is 43 billion barrels of recoverable oil resources. Due to the increase in domestic natural gas consumption, most of the discovered oil can be exported. Today, nearly 90 percent of crude oil is sold to Western Europe. Natural gas export started in 1961, and in 2000 the production reached 60 percent of the total hydrocarbon production. Today, one-fifth of EU's natural gas demand is met by Algeria. This figure is going to rise as new gas fields, export pipelines, and LNG facilities commercialize.²⁴ In terms of electricity, 54 percent the national demand is satisfied via SONELGAZ and the rest by the other producers. The distribution network has developed since 1970 and

²³ Moncef Ben Abdallah, Samir Allal, Jacques Kappauf and Mourad Preure "Towards A Euro-Mediterranean Energy Community: Moving from Import-Export to a New Regional Energy Model," *IPEMED*. Available at: http://www.ipemed.coop/adminIpemed/media/fich_article/1373880614_Towards%20a%20Euro-Mediterranean%20Energy%20Community.pdf

²⁴ MEDREC, "Country Report: Algeria", Available at: <http://www.medrec.org/en/download.php?page=2>

reached 256,302 km in 2010.²⁵ The potential for renewable energy is high, especially due to the Sahara, where the solar potential reaches 170,000 TW/h, which is the highest in the world. This territory is exposed over 2000 hours of sunshine per year. The wind energy potential varies according to the region: the average speed of wind is 1 – 4 m/s whereas in the south it exceeds 6 m/s. Another untapped source is geothermal energy. There are approximately 200 hot springs, of which one third have temperatures above 45 °C and they have an estimated potential of electricity generation at 700 MW.²⁶ The Algerian government is aware of its RES outlook and a legal framework has been integrated to the national energy policy. Hence, the total production is expected to exceed 400 TWh in the period of 2011 – 2030. Three phases have been identified to implement the RE projects: 2011 – 2013 the test of various sectors, 2014 – 2015 the deployment of renewable electricity program, 2016 – 2020 period was dedicated to the acceleration of such projects. The Center for the Development of Renewable Energy Sources (CDER) is also doing research on the development of solar, wind, and geothermal sources.²⁷ Overall, 5 percent share of solar in the electricity production is aimed between 2000 and 2025.

Table 3: Solar characteristics by region ²⁸

Region	North	Highlands	Sahara
Area (%)	4	10	86
Average duration of sunshine (h/year)	2 650	3 000	3 500
Average Energy received (kWh/m ² /year)	1 700	1 900	2 650

²⁵ European Commission, “Paving the Way for the MSP: Country Report Algeria”, Available at: http://www.pavingtheway-msp.eu/index.php?option=com_downloads&task=category&cid=7&Itemid=56

²⁶ Ibid.

²⁷ Reegle, “Algerian CDER”, Available at: <http://www.reegle.info/actors/3222/algerian-centre-for-renewable-energy-development.htm>

²⁸ Amine Boudghene Stambouli, “Algerian renewable energy assessment: The challenge of sustainability,” *Energy Policy* 39, (2011): 4510.

2.1.2 Egypt

Egypt is a major oil and LNG transit point from Persian Gulf to Europe. It is also one of the largest oil producers and the second largest natural gas producer in Africa. In the recent years, it has had difficulties meeting its domestic energy needs due to falling production and increasing demand. Although the natural gas exports have been declining since 2009, new discoveries may revive the production in the coming years.²⁹ The trouble to satisfy the domestic demand has led the government to focus on an untapped domestic energy source: renewables. Geographically Egypt is in an excellent position in terms of solar availability. Around 90 percent of it has an average radiation rate over 2200 kWh/m² per year. The Ministry of Electricity and Energy (MEE) has initiated the photovoltaic (PV) projects and currently the capacity is about 3 MW. Operation of several solar thermal power plants will start through the Integrated Solar Combined Cycle System (ISCCS) in Kuraymat with a capacity of 150 MW. Furthermore, the high wind speed on the Gulf of Suez, north of the Red Sea Coast, and east Oweinat facilitates the energy potential. Hence, a contract with the Spanish government to construct 85 MW of wind turbine was signed. In the Gulf of El-Zayt an area about 700 km² has been dedicated for new wind farms that will have the capacity of 3500 MW by 2022.³⁰ Regardless, with a population over 80 million and a growing economy, the energy demand will continue to increase. It is promising that, despite the state-led economy, the energy sector has been more liberal compared to its neighbors. Its partnership and collaboration with major energy companies has been successful. Moreover, as mentioned above, the Suez Canal and SUMED are key for the petroleum and gas transit, and related revenues have a substantial share in the national income. If Egypt proceeds with its utilization program for renewable energy, economic development, and energy security can be guaranteed.

²⁹ EIA, “Egypt: Country Analysis Brief Overview”, Available at: <http://www.eia.gov/countries/country-data.cfm?fips=eg>. Last modified: July 31, 2013.

³⁰ MEDREC, “Chapter II: Egypt”, Available at: <http://www.medrec.org/en/download.php?page=2>

2.1.3. Libya

The country's small population (6.5 million), limited agricultural activity, and lack of industrial base distinguish Libya from other North African countries. It resembles the Gulf countries that have extensive oil and gas reserves. Today, the oil sector provides 70 percent of its GDP and it has the largest amount of proved crude oil (48 billion barrels – 2013) in Africa and it has been a member of OPEC since 1962.³¹ In addition, Libya holds the fourth largest natural gas reserves on the continent. However, the hydrocarbon production was disrupted by the civil unrest in 2011. Although the production level recovered in 2012, due to the on-going protests in key oil ports in the central and eastern parts it remained low.³² In terms of natural gas, the exports grew after 2003 due to the development of the Western Libya Gas project and opening of the Greenstream pipeline to Italy. Production grew three times and became 594 bcf during the period between 2003 and 2010, but again due to the civil war the exports via Greenstream fell over 60 percent in 2012.³³ Moreover, just recently Libyan Berber protesters have shut the gas pipeline down demanding more rights.³⁴ Hence, even an exporter country like Libya needs to diversify its energy mix by adding renewables into the equation. The solar potential is high with 3000 – 3500 hours of sun radiation per annum as 88 percent of the territory is desert and flat. However, a lack of access to water makes the solar regime less profitable. In 2006 1.865 kWp of PV was installed and it continues to grow especially in the rural areas. In terms of wind energy, the average speed is between 6 – 7.5 m/s, which makes it an attractive place to invest. A

³¹ EIA, “Libya: Analysis”, Last modified: October 10, 2013. Available at: <http://www.eia.gov/countries/cab.cfm?fips=LY>

³² Reegle, “Energy Profile Libya”, Available at: <http://www.reegle.info/countries/libya-energy-profile/LY>

³³ Compared to 332 Bcf in 2010. BP, “2013 Statistical Review”, Available at: http://www.bp.com/content/dam/bp/pdf/statistical-review/statistical_review_of_world_energy_2013.pdf

³⁴ Reuters, “Libyan Berbers shut gas pipeline to Italy, cut major income source,” Last modified: November 11, 2013. Available at: <http://www.reuters.com/article/2013/11/11/us-libya-gas-idUSBRE9AA0UT20131111>

German – Danish consortium constructed a 25 MW pilot wind farm and several other appropriate sites were found to install more facilities. In addition, 5 new wind farms with a total capacity of 600 MW were also announced prior to the 2011 revolution.³⁵ Obviously, most of the projects could not be realized and the future of the energy sector depends on the course of political events.

2.1.4. Morocco

High dependency on fossil fuels imports (around 97 percent) has altered Morocco's energy policy. Diversifying the supply sources and making use of the domestic renewable energy potential have been prioritized. The 'Strategic National Plan for the Development of RES' foresees RES' contribution to be 20 percent by 2020.³⁶ After detailed research some pilot projects of electrical infrastructure have considered the role of RES seriously. Its proximity to Spain (14 km) makes Morocco the best candidate for a functioning electricity interconnection with the EU.³⁷ Elaborating on the renewable energy potential, especially solar energy is particularly significant. The radiation levels range from 2800 to 3400 hours respectively in the northern and southern parts, and reaches almost 5.6 kWh/day.³⁸ Solar PV systems have been available since the 1980s to meet the rural electrification and water pumping programs needs. The table below (Table 4) also indicates the expected increase in investments due to efforts by the government to promote RES and acceleration of international funds.³⁹

³⁵ IRENA (2010) "Renewable energy country profile: Libya". Available at: <http://www.irena.org/REmaps/countryprofiles/africa/Libya.pdf>

³⁶ Kingdom of Morocco, "National Action Plan", Available at: <http://www.unaoc.org/wp-content/uploads/National-Plan-of-Morocco.pdf>

³⁷ Rafael de Arce, Ramón Mahía, Eva Medina and Gonzalo Escribano, "A simulation of the economic impact of renewable energy in Morocco", *Energy Policy* 46 (2012): 335.

³⁸ MEDREC, "Chapter III: Morocco", Available at: <http://www.medrec.org/en/download.php?page=2>

³⁹ Tax and duties deduction, establishment of credit structures, subsidies for households etc.

In the coming years Morocco also wants to consolidate and capitalize its efforts in the renewable energy sector. In this way some significant contribution to the supply security, competitiveness of the productive sector and protection of the environment can be achieved. There are also several structuring programs adding to the high renewable potential of Morocco. For instance the electrification program aims to launch 200 MW in the short run and 350 MW of wind energy in the long run, while 250 MW of solar thermal power is in preparation.⁴⁰ Like Egypt, Morocco can also make use of its geographical location. Considering the EU's target to increase the share of the RES in its energy mix, Morocco is the best candidate among the Maghreb countries due to its proximity to Spain. Thus, once Morocco can meet its domestic demand, the RE exports to the EU can contribute to its economic development.

Table 4: Estimates of the Investments⁴¹

Energy sector	billion \$
Solar Program	9
Wind Program	3.5
Coal	3.5
Transmission + interconnection	1.1
Oil sector	1.65
Total	20.95

2.1.5. Tunisia

Tunisia is a medium income country and has had a steady GDP growth since the late 1980s. To be able to keep the economic growth sustainable, energy has been the main priority of the government, because since the end of 1980s the stagnation in hydrocarbon sources and the accelerated rise in the domestic energy demand, deficiencies have occurred. In order to reverse this problem, Tunisia has engaged in efficient energy policies. The discovery and exploitation of new reserves together with the facilitation of energy to the whole population were the two main elements.

⁴⁰ European Commission, "Paving the way for MSP: Country Report Morocco", Available at: http://www.pavingtheway-msp.eu/index.php?option=com_downloads&task=category&cid=7&Itemid=56

⁴¹MEDREC, "Chapter III: Morocco", Available at: <http://www.medrec.org/en/download.php?page=2>

Moreover, the government has also encouraged the development of renewable sources and energy efficiency. The National Agency for Energy Conservation (ANME) was established for the promotion of the RES, because Tunisia's hot and dry climate and flat geography enables the production of solar and wind energy. The annual radiation level varies between 1500 and 1900 kWh/m² and the average temperature is 9⁰C.⁴² Although the renewable sector is not advanced yet, establishment of a veritable market and a number of surface wells with solar pumps are alongside the national program. The Tunisian Solar Plan aims to reduce the hydrocarbon use by 660 Ktoe in 2016, which is 22 percent of the national consumption.⁴³ In terms of wind, the 'on shore' potential is about 3 MWh per year. The Tunisian Electricity and Gas Company (STEG) constructed a 10 MWh wind energy plant in Sidi Daoud. Moreover, with the support of ANME, several barriers and constraints to international cooperation could be lifted. Hence, it became possible to acquire 'know-how' in this field. To this day, Tunisia's interest and efforts to develop renewable energies have been great due to the political will, but still the share of renewables in the energy mix is limited. An effective capitalization of its renewable energy potential will help the country to boost this sector.

2.2 Challenges

The analysis above indicates that almost all North African countries have to cope with accelerating energy demand. However, their supply situations vary from one another: Morocco and Tunisia are net importers, whereas Algeria, Libya and Egypt are blessed with hydrocarbons to some extent. Hence, these variations impact the overall energy integration in different fields, especially renewables and nuclear have not been serious options for these countries. For energy importers and exporters this meant continued dependency on fossil fuels. Today, the countries also face domestic problems such as poverty, high levels of unemployment, and fast demographic growth. Energy is key to resolving all of these issues, but due to low pricing policies, and inefficient use, the South Mediterranean countries are under constant pressure. Succinctly, the current

⁴² MEDREC, "Chapter IV: Tunisia", Available at: <http://www.medrec.org/en/download.php?page=2>

⁴³ European Commission, "Paving the way for MSP: Country Report Tunisia", Available at: http://www.pavingtheway-msp.eu/index.php?option=com_downloads&task=category&cid=7&Itemid=56.

situation is not sustainable if this rapid population growth and urbanization continues. The infrastructure cannot cope with the rising domestic demand and full-scale investments in electricity, oil and gas networks are urgent. Even for the exporter countries, the big share of hydrocarbon trade creates structural socioeconomic, and financial imbalances. As mentioned before this situation is known as the ‘Dutch Disease’, due to the high dependence of the fossils fuels export, other sectors are not able to develop. This also causes rent-seeking strategies that are harmful to economic growth and lock the countries into a single sector and commodity market. In the following section four of the problems will be elaborated on: energy subsidies, dominance of conventional energy sources, lack of infrastructure, and political problems.

2.2.1 Energy subsidies

All of the North African countries heavily subsidize their energy prices for macroeconomic management. The International Energy Agency (IEA) estimates that the global energy subsidies will increase substantially and reach \$660 billion annually by 2020.⁴⁴ Energy importer states like Morocco, Tunisia and Egypt are confronted by rising energy expenses caused by increasing international energy prices. On the other side, the exporter countries like Algeria and Libya encounter higher differentials between global market prices and domestic subsidized prices.⁴⁵ Maintaining such tight control on domestic energy prices is seen as a strategic tool for the promotion of industrialization. In this way the aim was to keep the unemployment levels low. In addition, citizens’ income is protected and state benefits are distributed to the population.⁴⁶ Even the people with the lowest income have access to energy resources and this adds to the poverty alleviation efforts. The commodity price fluctuations are

⁴⁴ Dr. Sultan Ahmed Al Jaber, “MENA energy transition strategy: A call for leadership in energy innovation”, *Energy Strategy Reviews* 2, (2013): 6.

⁴⁵ Nikolaus Supersberger and Laura Führer, “Integration of renewable energies and nuclear power into North African Energy Systems: An Analysis of energy import and export effects”, *Energy Policy* 39 (2011): 4462.

⁴⁶ Bassam Fattouh and Laura El-Katiri, “Energy subsidies in the Middle East and North Africa”, *Energy Strategy Reviews* 2 (2013): 108.

prevented against the volatile prices in the international markets, hence inflation is also kept under control and the economy's competitiveness in the global era is enhanced. Although the governments of the Maghreb region may have the agenda of keeping their people content, interfering in the market in such an artificial way has serious consequences.

The same energy subsidies also affect people's behavior, discourage energy savings, and damage the environment. Furthermore, price signals are misrepresented and systemic miscalculations of resources become chronic. Most importantly, the structural supply scarcity becomes a chronic problem with the ever-increasing energy demand. Electricity theft, ineffective power plants and distribution systems also add to the problem.⁴⁷ When one digs deep into the root of the problem, the non-competitive state monopolies are confronted. Of particular importance the infrastructure projects cannot be realized due to the inflexible electricity market structure.⁴⁸ In recent years several Maghreb countries have tried to reverse this situation by implementing electricity market reforms. For instance Algeria passed an electricity law in 2002 aimed at unbundling the electricity and gas monopolist Sonelgaz's activities and establishing an independent regulatory body.⁴⁹ Tunisia and Algeria have also taken steps to liberalize their electricity sectors and gave independent power producers (IPP) rights to access the market. However, despite these reform efforts, the states are still far from their targets. Market operations are performed mostly by state utilities holding electricity purchase monopolies. Clearly, a statist economy that controls the energy prices is not compatible with the global free market economy. Sooner or later the structure is doomed to collapse.

⁴⁷ Ibid.

⁴⁸ Bernhard Brand and Jonas Zingerle, "The renewable energy targets of the Maghreb countries: Impact on electricity supply and conventional power markets", *Energy Policy* 39 (2011): 4411.

⁴⁹ Algerian Electricity Law No. 02-01, 2002. *Journal officiel de la Republique Algerienne* 13, (February 6, 2002) p.4.

2.2.2. Conventional resources over RES

The advantage of RES over the hydrocarbon sources is the lower volatility of prices. In addition, the RE contracts extend from 15 to 25 years and they fix the prices or index them to inflation.⁵⁰ Hence, they are much more predictable than fossil fuels that are impacted by every other crisis. RES is a domestic energy resource that also enables the governments to make long-term commitments to their citizens. For instance, new industries can flourish and help to alleviate unemployment. In terms of the finance, development costs are usually taken care of feed-in tariffs by the EU. Although the tariffs have fallen substantially in recent years development of RES technology via the EU may also lead to the cooperation in other areas, benefiting both sides in the long term. Diversification of the energy mix away from the fossil fuels is another very significant advantage of switching to the RES. Taking into account the rising prices of oil and natural gas supply in the last decade; diversification of supply is the best option to secure the energy flow. Although the arguments draw an optimistic picture, in reality the switch to RES is not that smooth.

The background information on the Maghreb countries' energy mix indicates the high dependency on fossil fuels. In addition, all these countries have faced economic stagnation during the global financial crisis and during the Arab Spring in particular. Thus, the change from conventional energy resources to technology-based renewables looks very unlikely in the near future. Moreover, the majority of the literature has found a correlation with greater GDP levels and a tendency to protect the environment by switching to RES.⁵¹ Considering the income levels and unstable political situations of the North African countries, prioritization of renewable energies seems unlikely. Governments may also be discouraged due to the long adjustment period. What seems to be a means to boost economic development can turn out to be a significant burden on the budget. Other findings also indicate a possibility of little or negative contribution of

⁵⁰ Shimon Awerbuch and Raphael Sauter, "Exploiting the oil GDP effect to support renewables deployment," *Energy Policy* 34 (2006) p. 2810 (2805–2819)

⁵¹ Ming-Yuan Huang, Janaki R.R. Alavalapati, Douglas R. Carter, Matthew H. Langholtz, "Is the Choice of renewable portfolio standard random?" *Energy Policy* 35, (2007): 5572.

RES to economic growth. Marques and Fuinhas have found out that the intensive use of renewables hinders economic growth, when the share of RES in the supply increases by 1 percent; economic growth decreases by 3 percent in ceteris paribus. The logic behind this fall is the high cost of renewables compared to hydrocarbon sources. Here the increase in the use of renewables also implies the declining share of other energy resources.⁵² In addition, the use of renewable energy can cause the substitution of technologies. The production capacity based on the fossil fuels may fall due to the abandonment of the technology since it is economically inefficient to use both technologies. The advancements in the technologies of conventional resources may also be neglected and result in accidents.⁵³ As a consequence, the slowing down of short- and medium-term economic growth may be inevitable. The research only takes into account the opportunity cost of enhancing the renewables, thus it lacks the ability to predict the long-term consequences of switching to RES. There is still a long way to go in the R&D, which will result in more profitable ways to deploy the technology.

2.2.3. Lack of network infrastructure

If energy is the blood, infrastructure is the vein connecting the supply and demand side to enable the system to live. Hence, having a proper and modern infrastructure is vital for the economy of a country. Except LNG, all the other energy resources need some kind of a network infrastructure to be transmitted. The Map 1 shows clearly the pipeline connections between the two shores of the Mediterranean. Considering the geography of the Mediterranean region the importance of having a proper infrastructure stands out. Since the Mediterranean Sea separates the northern and southern shores, constructing pipelines and electricity grids are expensive and time-consuming endeavors. Rapid population growth, urbanization and economic growth necessitate a substantial increase in their power generation and transmission capacity of the North African region. However, as mentioned before, the non-competitive state monopolies have difficulty with financing projects. This situation has changed with the

⁵² António Cardoso Marques and José Alberto Fuinhas, “Is renewable energy effective in promoting growth?” *Energy Policy* 46, (2012): 439.

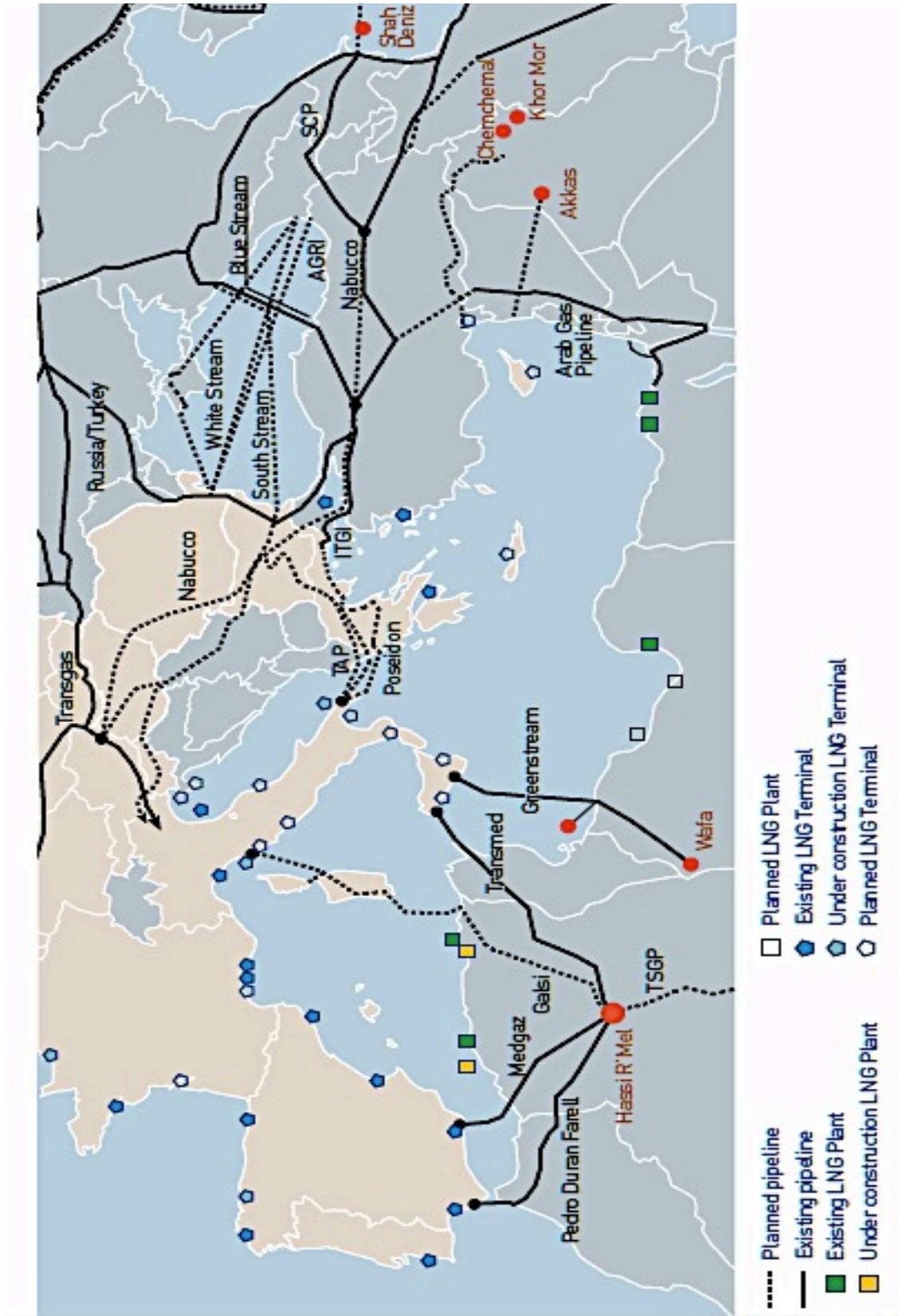
⁵³ *Ibid.*

Arab Spring, as new discoveries of natural gas (Egypt and Mediterranean Sea) have occurred and projects to increase the share of RES are established. During the uprisings the Northern African countries' economies were hurt. After the protests cooled down, the new regimes were looking for ways to boost their GDP, and energy trade came to the front as one of the best option, resulting in several action plans and RE projects aimed at integrating this region to the EU. Especially for the renewable energy projects like MSP and DESERTEC the construction and modernization of energy infrastructure is crucial. Obviously, these are large-scale plans concerning all of the Maghreb countries that necessitate collaboration on the regional level.⁵⁴ In terms of natural gas, the map (Map no.1 below) shows the existing pipelines. Building LNG facilities is expensive and it creates short-term commitments, since the transportation is done via tank ships. Whereas, natural gas pipelines require long-term and full commitment of both the supply and demand side parties. This feature is the main reason of the slow development of energy infrastructure. Although diversifying the energy mix using North African resources would add to the EU's energy security, the political tensions deter the decision. The possibility of supply disruption due to terrorism, insurgency and sabotage has also discouraged the construction of infrastructure.⁵⁵ This picture may change in the future through the EU's efforts. In the next section, political regimes and the Arab uprisings as the fourth challenge is discussed.

⁵⁴ Price Waterhouse Coopers, "100% renewable electricity. A roadmap to 2050 for Europe and North Africa," Available at: http://www.pwc.co.uk/pdf/100_percent_renewable_electricity.pdf

⁵⁵ Wolfram Lacher and Dennis Kumetat, "The security of energy infrastructure and supply in North Africa and renewable energies in comparative perspective", *Energy Policy* 39, (2011): 4466.

Map 1: Gas pipelines connecting two shores of the Mediterranean⁵⁶



⁵⁶ Natural Gas Europe, "Spanish firm buys stake in Medgaz Pipeline," Available at: <http://www.naturalgaseurope.com/spanish-firm-buys-stake-in-medgaz-pipeline>

2.2.4. Political problems – the Arab uprisings

The West was inclined to interpret the Arab uprisings with the transformations of 1989 in Central and Eastern Europe. Drawing these parallels is also the result of the hope of eventual democratization of the Arab countries in the Western sense. At the beginning the EU was surprised with the events that have unfolded and it had inconsistent reactions. The initial response ranged from military intervention in Libya, support for Egypt's regime change, to the acknowledgement of the crackdown in Bahrain.⁵⁷ Due to the Eurozone financial crisis and threat perception the EU hesitated to contribute to the transformations through market access, money and mobility. This hesitation has also shown its lack of efficient crisis management and conflict prevention mechanisms. Nonetheless, the energy importer countries were very much interested in what was going on in this region. Although the toppling of the authoritarian regimes is in the favor a 'normative power' like the EU, due to the policies of the UfM explained in the previous section, the EU was not prepared for such a change. After the initial hesitant attitude, the EU's approach to the uprisings was again based on its toolbox, rather than on the nature of the existing challenges.⁵⁸ The lack of strategy and instrument-led manner has again alienated this region at different levels. In addition, the protectionist barriers were not lifted nor were the quotas for immigrant workers were increased which has damaged the EU's credibility dearly. Hence, on one side the countries are reluctant to cooperate with the EU with regards to the energy sector and on the other side the EU still wants to wait and see the results of the uprisings before investing there.

Over the last two years the Arab Spring has lead to new tensions, one of them being the Syrian civil war. Although it seems like the citizens of Tunisia, Egypt and Libya are in favor of democracy, the possibility of change is still unsure. Considering the instances in the relevant countries since 2011, the persistence of military

⁵⁷ Daniel Byman, "Explaining the Western Response to the Arab Spring," *The Journal of Strategic Studies* 36, no. 2 (2013): 289.

⁵⁸ Pol Morillas and Eduard Soler i Lecha, "The EU and the Arab Spring, One Year After: A View from the North," *EuroMeSCo Brief* 39, (2012) Available at: <http://www.euromesco.net/images/briefs/euromescobrief39.pdf>

dictatorships and Islamist parties is evident. This means the EU has even more challenges to deal with when getting involved in this region. As stated by Fischer, democracy is a demand that has to come from within the society and not from external forces.⁵⁹ The USA has turned its attention to East Asia and cannot afford playing the ‘policeman’ of the region anymore, while the EU cannot play the game at all.⁶⁰ The rise of BRICS disturbs the balance constructed in the 20th century and the ‘Western’ powers most certainly lose their geopolitical power. Thus, the Southern Mediterranean region has become an empty chessboard where the players will be determined from scratch. Although the EU has its plate full with the financial problems of PIIGS, this is a good opportunity to be an effective actor in this region. The full cooperation of all Member States will help them to overcome the economic stagnation, as many investment and energy cooperation opportunities are available in this region. For instance, the EU has advanced solar energy technology that can be imported and benefit the both sides. But admittedly, this is still a region plighted by conflict and cooperation is not an easy task. The success of the new regimes in carrying on the previous regimes’ promises and meeting the demands of the society are still unpredictable. With such uncertainties, proceeding with the project-driven approach as defined in the UfM will be a wise option for the EU. The next chapter gives an analysis of the attempts of the EU to form regional collaboration with this region.

⁵⁹ Joschka Fischer “The Mediterranean crucible. Project Syndicate,” *Project Syndicate* (January 28, 2011) Available at: <http://www.project-syndicate.org/commentary/the-mediterranean-crucible>

⁶⁰ Laris Gaiser and Dejan Hribar, “Euro – Mediterranean Region: Resurged Geopolitical Importance,” *International Journal of Euro-Mediterranean Studies*. 5:57 (2012) p. 63.

CHAPTER 3

Analysis of the EU – North Africa Relations

The first part of this chapter gives a brief insight on the Europe – Arab world relations with a specific focus on Northern African countries. Starting with historic background information, several attempts to establish a regional cooperation between the EU and the Maghreb countries are delineated. The developments after the Arab Spring are also expounded, in order to understand the energy relations that will be discussed in the coming sections. In the second part of this chapter the Northern African countries' energy projects and RES outlook are discussed to be able to proceed to the next chapter, which examines the problems related to these issues.

Europe's relations with the Arab world have developed on two axes: a guilt complex and a superiority complex.⁶¹ France, the United Kingdom, Italy and Spain were the colonizers of the Mediterranean in the last century paving way to these two complexes. On the one hand, having exploited and dominated these countries constituted a burden to the European colonizers and made them feel guilty and protectionist. On the other hand, as the 'Orientalism' literature has alleged, the 'West' has viewed the 'East' as politically, socially and economically backwards. Hence the fusion of these two axes has been orienting the modernization efforts of these former colonizers. Since the 1960s, several projects attempted to Europeanize the governance, industry and judicial system. It can be argued that the Western world has been promoting these reforms to be able to keep the regimes loyal and ensure their power supplies. However, the Arab Spring has interrupted this support system as the ever-

⁶¹ Andreu Bassols, "Europe and the Arab (R)evolutions," IEMed Mediterranean Yearbook Med 2012 p. 70.

lasting regimes have been toppled one-by-one. After a relatively long period the Mediterranean basin is again in a state of flux that may change the face of the region forever. The authoritarian regimes have broken the routine and wiped out the leaders who were in power for the last few decades. The EU leaders were confused and looked for ways to keep their position in this region by implicit dominance via trade relations. More than three quarters of MENA exports go to the EU while only 5.6 percent of the EU's exports goes to Southern Mediterranean countries.⁶² For instance, Tunisia is heavily dependent on the EU as three-quarters of its exports goes there, Algeria is exporting half of its hydrocarbons to the EU and Libya's trade relations too have been on the rise since the end of its international isolation in 2011.⁶³ In all these countries France is the dominant bilateral donor and some other EU countries have also raised their share after the Arab Spring.⁶⁴ However, the Foreign Direct Investment (FDI) has been shifting from revolutionary Tunisia, Libya and Egypt to Morocco and Algeria, which are more stable.⁶⁵ Hence, with these three sets of data, one can deduce that the EU continues with its 'business as usual' approach, seem, to be lying in keeping its economically beneficial ties despite the changes in regimes that still can be considered authoritarian. Since Algeria, Libya and Egypt are significant energy suppliers to the EU the dependency is also not easy to be ruled out. It can be expected that the trade relations will continue to flourish considering the EU's increasing demand for energy. The specifics of the energy outlook of the Mediterranean area are given in the next section, before that the evolution of the Euro-Mediterranean relations will be dealt with.

⁶² European Commission, "EU Bilateral Trade and Trade with the World," Available at: http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_113421.pdf

⁶³ Kristina Kausch, "The End of the (Southern) Neighborhood," *Papers IEMed* 18 (2013): 14 – 15.

⁶⁴ Index Mundi, "Net ODA received," Available at: <http://www.indexmundi.com/facts/indicators/DT.ODA.ODAT.XP.ZS/compare?country=tn#country=dz:eg:iq:jo:ly:ma:sy:tn>

⁶⁵ The World Bank, "Foreign direct investment, net inflows," Available at: <http://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD>

3.1 Relations Between the EU – Southern Mediterranean Countries

The Mediterranean Sea is a natural boundary between the EU and the Northern African countries. As mentioned in the historical background section this boundary has enabled the EU to have relations with the southern Mediterranean countries as suits itself. Although the two axes of their relationship were economics and security the emphasis shifted from one to the other depending on the EU's preference and the trends around the world. It can be alleged that Cold War security concerns have molded their collaboration, while in the 1990s due to several attempts like ENP, UfM and Barcelona Process prioritized the economic aspect. After 9/11 and the Arab Spring of 2011, security issues again came to prominence. Before the whole process is discussed it should be mentioned that the Euro – Mediterranean integration process has been relatively successful. However, the conflicts among the partners, and lasting antagonisms, have hindered further collaboration in political and economic areas. The early attempts started with the creation of European Economic Community (EEC) and the prioritization of a common foreign policy. The member states proposed The Global Mediterranean Policy (1972), the Renewed Mediterranean Policy (1990) and the Euro-Mediterranean Policy (1995), all emphasizing the need to establish a common ground to deal with Mediterranean non-members.⁶⁶ However, the truly institutionalized cooperation between the EU and Southern Mediterranean countries started in the second half of the 1990s, with the Barcelona Process and the UfM that will be expanded upon next.

After the end of the Cold War, the EU and especially the former colonizers were trying to re-gain their influence. An early attempt was the Barcelona Conference of 1995, which was held with the participation of 15 EU member states and 12 Mediterranean partners that signed the Barcelona Declaration in the end. This was the beginning of a comprehensive partnership via political dialogue, economic and financial

⁶⁶ Federica Bicchi, "The Union for the Mediterranean, or the Changing Context of the Euro-Mediterranean Relations," *Mediterranean Politics* 16, no.1 (2011): 3.

collaboration.⁶⁷ There were three ‘baskets’ for the EuroMed cooperation: political, economic, and cultural which evolved via several institutions. Annual ministerial conferences, the EuroMed committee, the European Mediterranean Parliamentary Assembly and EuroMed Civil Forum are examples of such institutions created in the process.⁶⁸ However, these practices have not fulfilled ambitious goals like construction of a zone of peace, prosperity, and stability in the Mediterranean. Thus, the EU officials came up with European Neighborhood Policy (ENP) and Union for the Mediterranean (UfM). Bicchi describes this evolution as shifting a from “regionalism + politicization in the EMP, to bilateralism + functionalism with the ENP, to bilateralism + politicization in the UfM.”⁶⁹ Especially with the UfM’s firm stand in the regionalization process could be achieved. This initiative has defined six priority projects: 1) the de-pollution of the Mediterranean; 2) maritime and land highways; 3) civil protection; 4) alternative energies and Mediterranean Solar Plan (MSP); 5) higher education and research; and 6) supporting business. Clearly, the EU trusts its community-building afford and replicates its model in its neighbors. In this thesis the economic benefits of the Barcelona Process and UfM via energy trade between the Northern and Southern shores of the Mediterranean is elaborated upon. Subsequently the next section is about the evolution of this relationship.

The EU has been growing economically and in population wise since its establishment.⁷⁰ This growth rate has naturally triggered rise in energy demand rise. However, as a union that is considered as a model for many other organizations the demand rise was to be met in an environmentally friendly way. The 2050 goals were

⁶⁷ Paul James Cardwell, “EuroMed, European Neighborhood Policy and the Union for Mediterranean: Overlapping Policy Frames in the EU’s Governance of the Mediterranean,” *Journal of Common Market Studies* 49, no.2 (2011): 225.

⁶⁸ Ibid.

⁶⁹ Federica Bicchi, ‘The Union for the Mediterranean, or the Changing Context of the Euro-Mediterranean Relations’ *Mediterranean Politics* 16, no.1 (2011): 5.

⁷⁰ Detailed statistics on GDP and population growth can be accessed via: http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/introduction and <http://epp.eurostat.ec.europa.eu/portal/page/portal/population/introduction>

just one of the many ways for the EU to achieve sustainable and ecologically responsible growth. The aims are as follows:

1. Diversification of primary energy sources by introducing renewable sources of energy to the electricity mix.
2. Increasing energy efficiency and enhancing load management.
3. Increasing the use of renewable energy sources from 20 percent in 2000 to 80 percent in 2050, of which 65 percent will be domestic and 15 percent will be imported solar energy from MENA.
4. As a consequence of such a transition, conventional base load plants running most time at constant capacity will subsequently disappear, while the need for conventional balancing power capacity at low annual full load hours (less than 2000 h/yr) will increase. Nuclear plants will phase out because their economic performance will not be competitive under such conditions.
5. Introducing high voltage direct current (HVDC) power lines for solar electricity imports, interconnecting 11 potential sites for CSP production in 7 countries in MENA with 22 centers of electricity demand in 16 countries in Europe.⁷¹

As seen from the 5 points above the EU wants to diversify its energy supplies which is the key to secure the flow. In the past its dependency on Russian natural gas has caused disruptions. For instance in 2006, Russia has used its ‘energy weapon’ to punish Ukraine for its pro-Western stance.⁷² This incident has affected the EU directly as Ukraine is the transit country for the Russian natural gas. Anxiety of being over-dependent on a single country has surfaced and the effort to find alternative routes in the south has accelerated. Meanwhile, together with increasing the number of exporter countries, the EU aimed to diversify its energy mix by raising the share of RES. Particularly after the Fukushima nuclear disaster of 2011; increased emphasis has been placed on the need for cleaner and less dangerous energy resources.⁷³ The southern Mediterranean countries became a reliable alternative due to their geographical

⁷¹ Franz Trieb et. al. “Solar electricity imports from the Middle East and North Africa to Europe,” *Energy Policy* 42, (2012) : 342.

⁷² Valentina Feklyunina, “Russia’s International Images and its Energy Policy: An Unreliable Supplier?” in *Europe-Asia Studies* 64, no. 3 (2012): 453.

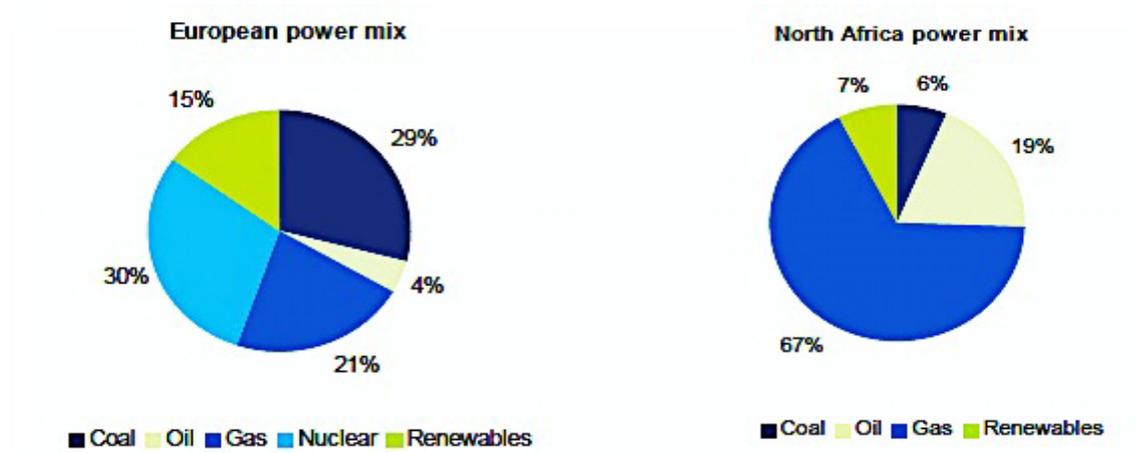
⁷³ Daniel Yergin, *The Quest: Energy, Security and the Remaking of the Modern World*. (London: Allen Lane, 2011) p.2.

proximity and renewable energy potentials. The EU expands its energy ties with this region both for fossil fuels and renewable energy sources. Thus, it has expedited the promotion of energy infrastructure and electricity grids in the Mediterranean region. This progress also conforms with the EU's Energy 2020 Strategy prioritizing partnerships for secure flow of energy and improvements regarding the access to sustainable energy.⁷⁴ This policy also seeks to boost investments in the efficient and low-carbon energy technologies that eventually may lead to the Europeanization of this energy market. In that vein on March 2011, the EC has issued the 'Partnership for Democracy and Shared Prosperity with the Southern Mediterranean' stating the strategic significance of the South Mediterranean both in terms of access to resources and partnership in the production and management of RES.⁷⁵ In the same year an 'EU-Southern Mediterranean Energy Community' that would start with Maghreb states and expand to the Mashreq was announced by the EC. These developments clearly indicate the seriousness of the EU in its quest for a long-term collaboration with this region. This discussion is summarized in Figure 1. Although it is from 2006, the EU is clearly approaching its 20% renewables target. It seems that coal will preserve its share due to the American Renaissance and imports of cheap coal from the US. In North Africa, gas seems to dominate and the share of renewables remains low. This picture is to be altered via closer collaboration with the EU and among the states of North Africa. The EU as known today, has started as the Coal and Steel Community and become a tightly knit unity; the same may apply to this region as well. Before analyzing the EU – Southern Mediterranean cooperation the energy outlook of the Northern African countries is provided in the next section.

⁷⁴ Observatoire Méditerranéen de L'Énergie, *Mediterranean Energy Perspective 2011*, (OME: Nanterre, 2011), p.65.

⁷⁵ European Commission, "Partnership for Democracy and Shared Prosperity with the Southern Mediterranean, COM(2011)," Available at: http://eeas.europa.eu/euromed/docs/com2011_200_en.pdf.

Figure 1: Electricity mix of European (EU27) and the five North African countries⁷⁶



3.2 The EU – North Africa Energy Cooperation

In this section an overview of the energy cooperation between the EU and the Maghreb countries is given. Firstly, the question of why the EU has been interested in this particular region is discussed before proceeding with the deliberation of previous attempts to establish this cooperation. After that a detailed analysis of the energy collaborations under the EMP, ENP, Barcelona Process and UfM is given. To conclude this section and chapter some scenarios and future projects will be discussed.

The Euro-Mediterranean energy collaboration started with the EU’s effort to promote its market norms to its neighbors in 1995. It has chosen this market-based effort for three reasons. Firstly, it was seen as an exercise of the projection of the constituent norms. Secondly, these efforts have proved to give the EU companies greater access in tertiary producer countries. Lastly, a foreign policy on which the whole Member States can agree upon could be realized via such initiatives.⁷⁷ It can be alleged

⁷⁶ The power system sizes were 3300 TWh/a and 180 TWh/a respectively (2006). Eurostat. Energy and Transport in Figures. Statistical Pocketbook 2009: European Commission; 2009. International Energy Agency (IEA). Statistics by country and region. 2009; <http://iea.org/Textbase/stats/index.asp>.

⁷⁷ Hakim Darbouche, “Energy Issues and the Prospects of the Mediterranean Solar Plan,” *EUROMED* 15 (2008): 132.

that the efforts have led to institutionalized enterprises under the EuroMed and ENP. However on the flip side of the coin the southern Mediterranean countries did not perceive these policies with great enthusiasm. They saw the efforts as narrow and driven by norms and regulations that lack a strategic approach. The countries have also realized that the EU Member States were not fully committed to the market norms they were exporting. For instance when the issue of unbundling the vertically integrated energy companies came up, the Member States could not agree.⁷⁸ Although there are some shortcomings, the EU values its relations with this region. It is vitally significant for energy security, particularly as the fossil fuels of Algeria and Libya, which have 4.5 percent of world's oil and 4.4 percent of world's gas reserves respectively, binds the EU to this region.⁷⁹ This foreign reserves dependency seems to grow; by 2030 about 50 percent of oil and 94 percent of natural gas will be imported.⁸⁰ Taking into account the long-term contracts to deliver gas, policy initiatives, and funded integration projects, the EU's commitment to this region can be seen clearly. For the energy importer countries like Tunisia and Morocco, electricity delivery from the EU is crucial. The Union for the Co-ordination of Transmission of Electricity (UCTE) grid was built in 1997 between Spain and Morocco and has the capacity of 400 kV. In 2005 it concluded and all operational tasks were transferred to ENTSO-E that meets around 500 million people's electricity demand.⁸¹ This expansion had limited effect on Libya and Egypt; they remain isolated due to their geographical location. This was the general outlook of the EU – Maghreb relations, now a detailed analysis of the institutionalization attempts will be given.

⁷⁸ Ibid.

⁷⁹ Roberto F. Aguilera, "Assessing oil resources in the Middle East and North Africa," *OPEC Energy Review* 1, (2009): 53.

⁸⁰ Gawdat Bahgat, "Europe's energy security: challenges and opportunities," *International Affairs*. 82, no. 5 (2006)

⁸¹ ENTSO-E, "Union for the Coordination of the Transmission of Electricity," Available at: <https://www.entsoe.eu/index.php?id=102>

3.2.1. Euro – Mediterranean partnership and European neighborhood policy

Earlier attempts to establish a Euro – Mediterranean energy cooperation include the Euro-Arab Dialogue and the Global Mediterranean policy, which were introduced in 1970s. Their aim was to respond to the oil crisis but failed to achieve any tangible outcomes due to the EC's institutional shortcomings.⁸² As a result, until 1990s there were no significant attempts for further cooperation between the two shores. It was not until the Euro-Mediterranean Partnership (EMP) project (conception phase 1993 – 95) that institutionalized energy collaboration was realized.⁸³ For the first time all the EU Member States and 12 Mediterranean countries⁸⁴ were brought together. The primary purpose was to make the states aware of the existing opportunities in their neighboring countries. On the EU's side, it was also crucial to direct its external resources that were dedicated to the Central and Eastern European countries back to this region. The first foreign ministerial conference was held in Barcelona in 1995 and three main areas of cooperation were decided upon:

- a political and security partnership with the aim of establishing a common area of peace and stability;
- an economic and financial partnership with the aim of creating an area of shared prosperity;
- a partnership in social, cultural and human affairs in an effort to promote understanding between cultures and exchanges between civil societies.⁸⁵

There were political, economic and sociocultural sides of this declaration, and the pivotal role of energy in the enhancement of this partnership was emphasized. Although it was stated in the declaration, energy collaboration was not an immediate

⁸² Hakim Darbouche, "Third Time Lucky? Euro-Mediterranean Energy Cooperation under the Union for the Mediterranean," *Mediterranean Politics* 16, no. 1 (2011): 194.

⁸³ *Ibid.* 195.

⁸⁴ Morocco, Algeria, Tunisia, Egypt, Jordan, Israel, Syria, Lebanon, the Palestine Authority, Turkey, Cyprus and Malta.

⁸⁵ Esther Barbé, "The Barcelona Conference: Launching Pad of a Process," *Mediterranean Politics* 1, no. 1 (1996): 32.

objective. Security, migration, the Middle East peace process and political reform were the prioritized issues.⁸⁶ The relatively stable situation of the petroleum market has also caused this lack of attention. Nevertheless, the region's hydrocarbon potential and location as a transit point for the supplies of Gulf and the Caucasus have given it some nominal recognition. Moreover, the states have realized that they are on the same boat and will face common challenges, which requires some coordinated action. Peace, stability and prosperity could only be achieved if there is dialogue, cooperation and exchange of ideas.

Following this declaration the Euro-Mediterranean Energy Forum (EMEF) has been formed and its main task was defined as the facilitation of energy regulation reforms and preparation of legislative frameworks for the Mediterranean partners.⁸⁷ Three action plans covering the periods of 1998 – 2002, 2003 – 06, and 2008 – 13 have been adopted since EMEF's establishment in 1997. Although there were slight differences in the objectives, convergence of energy policies between the two shores of the Mediterranean, integration of the energy markets, and competition among the members were achieved. European Commission has allocated €5 million to contribute to the realization of these goals.⁸⁸ Although such financial and institutional supports existed previously, the energy cooperation framework did not progressed as expected. More weight was given to the Middle East peace process and ratification of association agreements, while areas like transport, water and telecommunication also took precedence.⁸⁹ Thus, in time the EMP's energy dimension was taken over by the European Neighborhood Policy (ENP).

⁸⁶ Oliver Schlumberger, "The UfM and the Future of Euro-Arab Relations," *Mediterranean Politics* 16, no.1 (2011): 147.

⁸⁷ Hakim Darbouche, "Third Time Lucky? Euro-Mediterranean Energy Cooperation under the Union for the Mediterranean," *Mediterranean Politics* 16, no. 1 (2011): 196.

⁸⁸ European Commission, "Euro-Mediterranean Partnership: EuropeAid," Available at: http://ec.europa.eu/europeaid/where/neighbourhood/regional-cooperation/documents/infonotes_enpisouth_regional_cooperation_en.pdf

⁸⁹ Hakim Darbouche, "Third Time Lucky? Euro-Mediterranean Energy Cooperation under the Union for the Mediterranean," *Mediterranean Politics* 16, no. 1 (2011): 199.

The launch of the ENP coincides with the Commission's announcement of Green Paper of 2000 focusing on the energy security.⁹⁰ The exponential rise of oil prices in 2000s and the deteriorating relations between the EU and Russia were indicators of the shifting geopolitics of energy markets. The need of a post-enlargement policy aiming at re-organization of relations with new neighbors became inevitable. With this new policy declaration the EU wanted to construct a wider energy community bound by common regulations comprising of trade, transit and environmental rules.⁹¹ It can be argued that energy security has been assured via the EU's market-based provisions. As mentioned by the Commissioner Ferrero – Waldner the 'ENP energy treaty' linked various geographical regions to unite under the same purpose of securing the energy supply.⁹² Several action plans were put into force to support energy networks and interlinks between the two shores of the Mediterranean. Besides the regulatory efforts, identification and corroboration of strategic infrastructure, like LNG terminals, gas pipelines and electricity grids were also put into effect. Commission's Green Paper of 2006 added new energy policy measures due to the flaming controversies between Russia and its CIS neighbors. These new energy packages aimed at empowering the energy relations with the southern Mediterranean exporters and transit countries, while also supporting new gas supply routes.⁹³ In this way Algeria, Egypt and Libya became strategic energy partners that now constitute reliable alternatives to Russia. For these countries, energy partnership is also seen as a springboard for future strategic cooperation. An overall assessment of the ENP is insufficient and limited. Algeria and

⁹⁰ European Commission, "Green paper: towards a European strategy for the security of energy supply," Available at: http://ec.europa.eu/energy/green-paper-energy-supply/doc/green_paper_energy_supply_en.pdf

⁹¹ European Commission, "An external policy to serve Europe's energy interests: paper from the Commission/SG/HR to the European Council," Available at: http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressdata/EN/reports/90082.pdf

⁹² Richard Youngs, *Energy Security: Europe's New Foreign Policy Challenge* (London: Routledge, 2009) p.24.

⁹³ European Commission, "Green paper: a European strategy for sustainable, secure and competitive energy," Available at: http://europa.eu/documents/comm/green_papers/pdf/com2006_105_en.pdf

Libya, the two most important suppliers of the south, have refused to take part in this policy. Thus only some normative and infrastructural objectives could be implemented. They were skeptical because of the EU's market-based approach that did not provide any reform in their energy sector. The failure to settle the dispute between Algeria's Sonatrach that wanted to operate in a transparent market and Spain's political and industrial authorities has shaken the confidence even further.⁹⁴ This is just one example of many that caused the distrust by EU-led policies like the EMP and the ENP. In the next section UfM's innovations and efforts to change this situation is discussed.

3.2.2. Union for the Mediterranean

Former French president Sarkozy launched the initial idea for the Mediterranean Union (later the Union for the Mediterranean) during his 2007 electoral campaign. This was seen as a challenge to the existing two initiatives: the EMP and the ENP. As distinct from them, the UfM was driven by domestic politics and national foreign policy priorities.⁹⁵ In addition, the dialogue between the two shores was enhanced via stronger intergovernmental institutions and a shared Secretariat.⁹⁶ Despite some of the better features, the UfM was still dominated by intergovernmental politics where nation states were at the center and the multilateral institutions did not get their deserved places at the table. Thus, the previous frameworks could not be replaced and the same policies were reinforced again. Looking from the energy perspective, Sarkozy's vision was to support the Franco-Algerian gas cooperation that may become a chief force behind the Union, as was the case for the German-Franco cooperation in 1950s.⁹⁷ However, soon

⁹⁴ Lesile Crawford and Andrew England, "Spanish gas groups fear reliance on Algeria," *Financial Times*, May 12, 2008. Available at: <http://www.ft.com/intl/cms/s/0/190b0332-1fb2-11dd-9216-000077b07658.html#axzz2mcDqRWRO>

⁹⁵ Rosa Balfour, "The Transformation of the Union for the Mediterranean," *Mediterranean Politics* 14, no.1 (2009): 99.

⁹⁶ *Ibid.* 100.

⁹⁷ David Gauthier-Villars, "Sarkozy seeks to pair French, Algerian natural-gas firms," *The Wall Street Journal*, June 29, 2007. Available at: <http://online.wsj.com/news/articles/SB118307740273352310>

this idea proved to be wrong and the Sonatrach – Gaz de France (GDF) partnership remained limited. It can be argued that the mistrust caused by the EMP and ENP continued. After the two relatively fruitless attempts, the focus on more concrete projects, especially in the energy field, was a good choice to boost the frozen relations.

The UfM paved the way to more concrete projects and more tangible relations between the two shores of the Mediterranean. On July 13, 2008 the members identified six priority projects and the foreign ministers ratified them few months later. The de-pollution of the Mediterranean, maritime and land high ways, civil protection, higher education and research, small and medium-sized business development and the push for RES were the accepted projects.⁹⁸ Additionally, enhancement of solar energy was emphasized and the Mediterranean Solar Plan became the catalysis to enhance Euro – Mediterranean energy cooperation. This project has been the ‘flagship’ surpassing all other projects since 2008 and a detailed analysis of the MSP will be given in chapter four. In general the aim was to reach a capacity of 20 gigawatts/year by 2020 and create a ‘Euro-Mediterranean green electricity market’.⁹⁹ Although the renewable energy potential of this region has been known for a while, it took years to establish a new form of trade to utilize it. The reason behind this was the overdependence on Russia’s natural gas exports that became one of the main primary energy resources. This preference has also detracted the EU away from its energy supply diversification policy. With the implementation of these solar plans the EU also looks after the host countries’ welfare. Employment opportunities, technology transfer and meeting the growing domestic energy requirements are just some of the ways development is ensured. DESERTEC Initiative is a twin project that shares the same aspirations and aims to raise \$400 billion to meet up to 15 percent of Europe’s electricity needs by 2050.¹⁰⁰ Although both were

⁹⁸ Union for the Mediterranean, “Projects,” Available at: <http://ufmsecretariat.org/projects/>

⁹⁹ Hakim Darbouche, “Third Time Lucky? Euro-Mediterranean Energy Cooperation under the Union for the Mediterranean,” *Mediterranean Politics* 16, no. 1 (2011): 203.

¹⁰⁰ Franz Trieb et. al. “Solar electricity imports from the Middle East and North Africa to Europe,” *Energy Policy* 42 (2012): 350.

expected to start by 2012, today they still remain as ‘desert dreams’. The reasons for this flaw are elaborated on in the next chapter, subsequent to a brief appraisal of the UfM is provided.

The effects of the UfM on the economies and technological advancement of the Southern Mediterranean countries have been and will be discussed later, but for now some possible political consequences are considered. The UfM was criticized for its tendency to exclude societal voices and re-governmentalization of relations. Hence, in a sense the Arab states became veto-players whose authoritarian regimes are supported. Since most of them are developing, middle-income countries that experience economic stagnation, the governments can maintain their authoritarian stances.¹⁰¹ However, one would expect the EU to export its political norms and values like democracy, human rights and the rule of law. But this has not been the case so far. Maybe the EU did not want to ruin its reputation as the antidote to the US’s Middle Eastern policies, which are considered as insensitive to the peculiarities of this region.¹⁰² In addition, the Arab countries have also benefited from the EMP and ENP individually; they have room to use the funds for civil society programs. However, it would be a delusion to expect the UfM to transform the Euro-Mediterranean relations altogether. So it is useful to discuss two possible scenarios defined by Schlumberger: the ‘Schuman – Sarkozy Scenario’ and the ‘Realistic Scenario’. The first one regards the French ‘union of projects’ approach based on Jean Monnet’s functionalist method. It argues that first, some primary links are created which evolve and result in deeper integration.¹⁰³ The flaw of this scenario is that there is an ongoing conflict and mistrust among the Arab countries, preventing political integration. However, considering the beginning of the EU as known today, the level of confidence between Germany and France after the World War

¹⁰¹ Steven Heydemann, “Upgrading authoritarianism in the Arab world,” *Saban Center Analysis Paper* 13, (Washington, DC: Brookings Institution). Available at <http://www.brookings.edu/papers/2007/10arabworld.aspx>

¹⁰² Oliver Schlumberger, “The Ties that do not Bind: The Union for the Mediterranean and the Future of Euro-Arab Relations,” *Mediterranean Politics* 16, no.1 (2011): 137.

¹⁰³ Cris Shore, *Building Europe: The Cultural Politics of European Integration*. (New York: Routledge, 2000) p. 24.

It was also not high. Hence, it cannot be foreseen that the collaboration in some areas with shared interests may over time lead to widening spheres of cooperation and deeper integration with the EU. The second scenario is pessimistic about the political integration and argues that the EU would value its material interests over a normative vision.¹⁰⁴ Strengthening the Arab states as veto-players give the opportunity to block any initiatives that are politically unwelcome. Furthermore, the insistence on energy projects is also de-politicizing the cooperation. It is safe to say the alteration of undemocratic political regimes is not on the EU agenda any longer. The next section discusses the Arab Spring's effect and possible consequences for the political regimes in the Northern Africa, which altered its relations with the EU.

¹⁰⁴ Oliver Schlumberger, "The Ties that do not Bind: The Union for the Mediterranean and the Future of Euro-Arab Relations," *Mediterranean Politics* 16, no.1 (2011): 146.

CHAPTER 4

Barriers to the Integration with the EU

In the previous chapter, several attempts of the EU to integrate the North African region were described. Since the 1990s both shores have been focused in the process of greater regional interaction. Clearly, none of them were fully successful in either realizing the North-South or South-South integration. In this section, a theoretical explanation is provided for the lack of integration by handling EMP, ENP and UfM one-by-one. Barbé and Surrallés propose four models of region-building used by the EU to mold their integration with Southern and Eastern Mediterranean countries (SEMCs): EU-based community-building, multilateral partnership-building, differentiated integration, and *à la carte* cooperation.¹⁰⁵ They are differentiated according to two variables: polarity and the scope or rationale of the collaboration. Polarity suggests whether or not the relations are EU-centered, while the scope or rationale signifies whether the integration is more holistic / normative or sectorial / functional.¹⁰⁶ The EU-based community building, as the name suggests, is centered and normative which leaves little room for differentiation. The multilateral approach is non-centered but still normative since geographical differentiation is curbed. Differentiated integration is centered and functional, although the convergence with the EU norms is targeted this can happen in varied paces depending on the policy area and country. Lastly, the *à la carte* cooperation welcomes various types of differentiation, hence it is

¹⁰⁵ Ester Barbé and Anna Herranz Surrallés, “Dynamics of Convergence and Differentiation in Euro-Mediterranean Relations: Towards Flexible Region-Building or Fragmentation?” *Mediterranean Politics* 15, no. 2 (2010): 131.

¹⁰⁶ *Ibid.*

non-centered and functional.¹⁰⁷ After establishing the theoretical framework, EMP, ENP and UfM's categorization will be conducted accordingly.

The EMP was the first attempt to establish a Euro-Mediterranean 'region' by promoting economic, political, and social collaboration. It is holistic in manner and normative in rationale. As seen clearly in the Barcelona Declaration, economic and financial domains were prioritized and an institutional framework was given for the political and security issues.¹⁰⁸ The EU's top-down approach via an intergovernmental agenda aimed at the emergence of a shared identity. As the project proceeded, it became obvious that the tendency towards EU-centeredness was rising due to the European Commission's role as the policy setter. Hence, EMP has deviated from its initial setting as a partnership to a hierarchical scheme. The deteriorated relations of Arabs and Israelis paralyzed the whole process and region-side integration was not realized. A less holistic approach was taken with the ENP. Although it was again EU-centered, this time gradual integration of its southern 'neighbors' in a number of policy areas was the aim. EU *acquis* were the framework of the domestic reforms that had some sectorial and geographical flexibility.¹⁰⁹ There was also the change from the multilateral approach of the EMP to a bilateral ENP, which was better at meeting the partners' preferences. In addition, scholars like Zukrowska and Pace emphasized the functional and flexible nature that did not give precedence to a shared identity.¹¹⁰ This approach suffered from

¹⁰⁷ Alexander C-G. Stubb, "A categorization of differentiated integration," *Journal of Common Market Studies* 13, no.2 (1996): 291.

¹⁰⁸ Stephen Calleya, *Navigating Regional Dynamics in the Post-Cold War World: Patterns of Relations in the Mediterranean Area* (Boston, MA: Dartmouth Publishing Company, 1997) p.65.

¹⁰⁹ Emanuel Adler and Beverly Crawford, "Normative power: the European practice of region-building and the case of the Euro-Mediterranean partnership, in: E. Adler, F. Bicchi, B. Crawford & R. A. Del Sarto (Eds) *The Convergence of Civilizations: Constructing a Mediterranean Region* (Toronto: University of Toronto Press) p.4.

¹¹⁰ Michelle Pace, "Norm shifting from EMP to ENP: The EU as a norm entrepreneur in the south," *Cambridge Review of International Affairs*, 20, no.4 (2007): 672. & Katarzyna Zukrowska et al. "Building Euro-Med free trade agreement: how to improve the bilateral management strategies?" Go-Euromed Working Paper 0804 (2008) p.25. Available at : <http://www.goeuromed.org>

the lack of a clear leadership pushing forward the process and no clear direction for the reforms. Lastly, the UfM was launched on the 10th anniversary of Barcelona Process and emphasized the need for project-based approach. Hence, it fits into the *à la carte* type of collaboration, not all partners had to take part in every project. This tactic is in line with Mitrany's functionalist theory of regional cooperation that advocates for the stepwise sectorial collaboration as the way forward when there are political disagreements.¹¹¹ Although some scholars favored this approach, others stressed the Arab-Israel conflict that would surface every time there is an attempt for further cooperation. One should admit that after the pro-reform and political integration based EMP and ENP, UfM's pragmatic attitude is quite a radical change. As of today, the UfM has also not lead to deeper regionalism; hence the EU has still not found a functional scheme to achieve accelerated integration. Some solutions based on that assumptions are discussed in the next chapter.

The discussion now turns back to the energy cooperation, especially after the collapse of the Soviet Union energy became a key issue in the Euro – Mediterranean relations. As mentioned before, the EU tried to both diversify its suppliers and increase the share of renewable energies in its energy mix. Disappointments caused by natural gas disruptions and China's increasing dominance over Central Asian resources makes the North African countries the best candidates for deepening energy collaboration. The technologically advanced north and fossil fuels rich south constitute a perfect match. Since most of the hydrocarbon potential is exploited and traded with the EU, the technological investment and construction of infrastructure to transmit the electricity became vital issues. The previous paragraph has indicated that the EU tried to converge on the basis of its *acquis communautaire* even if it concerns the energy issue. A Euro-Mediterranean energy partnership based on EU regulations may not be the best option to push forward this cooperation. In other words, the EU's 'one-size-fits-all' approach did not result in fruitful collaboration all the time. Hence, in the next section, two of the barriers for further integration are given.

¹¹¹ David A. Mitrany, *Working Peace System* (London: Royal Institute of International Affairs, 1943) p.79.

4.1 Financial

The first barrier is caused by a lack of financial resources to dedicate to the development of renewables and construction of electricity grids. Although feed-in tariffs and tax incentives are provided, these are not enough to build any large-scale renewable energy plants.¹¹² Hence the creation of an institution to finance the projects of the UfM on a regular basis has been negotiated. The three options on the table were the establishment of an *ex nihilo* bank with a significant capital base; a Euro-Mediterranean Bank based on the existing structure; and the creation of a Mediterranean public fund.¹¹³ The Commission favored the second option since it would support the private sector, give access to the SMEs to bank credits, encourage financial markets and transfer technology via long-term funds. However the uncertainties surrounding the UfM and the need for large amounts of funds have disrupted this process. The European Investment Bank (EIB) estimates the total amount of investments in the southern and eastern Mediterranean to be around €21 billion by 2020 and majority would go to solar energy technology.¹¹⁴ It has been a dream to make use of the solar radiation in the Saharan Desert to meet the European electricity need. Although Spain and Germany are the leaders of solar energy technology in Europe, they are still cautious about investing. In addition, there is still not enough demand on the North African side to use the power generated by the solar plants. Although the calculations indicate the sun radiation on just 1 percent of Earth's desert surface can meet the demand of the world.¹¹⁵ Since, the potential clearly exceeds North Africa's energy demand and there is the need to transmit the energy using electricity grids. The most suitable place to interconnect North Africa

¹¹² EIB, "Study on the Financing of Renewable Energy Investment in the Southern and Eastern Mediterranean Region," Available at: http://www.eib.org/attachments/country/study_msp_en.pdf

¹¹³ Bicchi, Federica "The Union for the Mediterranean, or the Changing Context of the Euro-Mediterranean Relations," *Mediterranean Politics* 16, no.1 (2011): 13.

¹¹⁴ *Ibid.*

¹¹⁵ Desertec Foundation, *Desertec White Book 4th Edition* (Bonn: Desertec 2009) p.26. World's one year energy demand can be met if 1 percent of the desert surface is covered with PV and it gets 6 hours of sun light.

and the EU is Gibraltar that can offer a capacity of 1400000 KW.¹¹⁶ Another option is the interconnector between Italy and Tunisia, which would be more expensive than the previous project.¹¹⁷ Nevertheless, today the capacity to transmit energy between the two continents is limited and it will remain so in the coming years. Considering the financial crisis in the EU, it is safe to say that decisions regarding climate change and renewable energy policy cannot be taken. Progress in these agendas can be achieved via subsidies and market mechanisms that are channeled to fight the crisis. Furthermore, the fall of economic growth, demand and conventional energy prices have been delaying the investments in renewables and transmission grids. The IEA stated the investment went from an increase of 85 percent in 2007 to a fall of 20 percent in 2009.¹¹⁸ The specific effects on solar energy initiatives like MSP and DESERTEC are discussed later. Before that, several other international initiatives to promote renewable energy are given.

The International Renewable Energy Agency (IRENA) was launched in 2009 to disseminate and endorse renewable energies. Its main activities involve developing new synergies, facilitating dialogue and information, and empowering the flow of technology and innovation.¹¹⁹ The agency also finances development of local capacities and infrastructure. This comprehensive agenda can provide for the needs of the North African countries. Another initiative is the International Climate Governance or the Clean Development Mechanism (CDM). The CDM was established through the Kyoto Protocol to support emerging and developing countries' capacity building and

¹¹⁶ Spain's net electricity consumption in 2010 was 267.04 billion KW. EIA, "Spain: Overview," Last modified: May 30, 2013. Available at: <http://www.eia.gov/countries/country-data.cfm?fips=sp>

¹¹⁷ Andrew Janis Folkmanis, "International and European market mechanisms in the climate change agenda – An assessment of their potential to trigger investments in the Mediterranean solar plan," *Energy Policy* 39 (2011): 4490

¹¹⁸ International Energy Agency, *World Energy Outlook 2009*. (Paris: IEA-OECD, 2009) p. 161.

¹¹⁹ IRENA, "Vision and Mission," Available at: <http://www.irena.org/menu/index.aspx?mnu=cat&PriMenuID=13&CatID=9>

renewable energy projects.¹²⁰ Currently there are around 5000 CDM projects that are either under valuation or have already started and among 60 percent of them are on renewables.¹²¹ However, only a few of them are about joint solar energy projects, which are small in scale like PV, solar water heating and solar cooking. A lack of collaboration between authorities and local companies to prepare projects has been the chronic problems of the CDM.¹²² The Clean Technology Fund (CTF) finances large-scale projects on long-term green house gas emission savings. It also fosters development via co-funding programs, which are embedded in national programs. Contribution to the implementation of Millennium Development Goals (MDGs) by using finances of Multilateral Development Banks (MDBs) is also a primary focus.¹²³ These were some of main renewable energy initiatives that have been evolving their objectives and focus over the time. However, none of them have the capacity to support large-scale renewable energy projects. DESERTEC and MSP are discussed in the case studies section, which are considered to be relatively successful, compared to other initiatives.

4.2 Regulations and Electricity Market Reforms

This section elaborates on another pressing problem: the lack of diverse regulatory systems and free electricity market in North African countries. Increased regional cooperation and integration with the EU in terms of energy is hindered due to this problem. As mentioned in the previous section, the EU put forward several multilateral initiatives like Mediterranean Solar Plan, the DESERTEC, Clean

¹²⁰ Srikanth Subbarao and Bob Lloyd, “Can the Clean Development Mechanism (CDM) deliver?” *Energy Policy* 39 (2011): 1600.

¹²¹ Kerstin Fritzsche, Driss Zejli and Dennis Tänzler, “The relevance of global energy governance for Arab countries: The case of Morocco,” *Energy Policy* 39 (2011) p. 4503.

¹²² José Maria Marin Quemada and Gonzalo Escribano, “The Mediterranean Solar Plan as a Euro-Mediterranean Vector of Integration and Economic Development,” *IEMed* (2011) p.21.

¹²³ Clean Investment Fund, “Funds & Programs,” Available at: <https://www.climateinvestmentfunds.org/cif/node/2>

Technology Fund and the directive 2009/28/EC ¹²⁴, which offers cooperation opportunities, to accelerate the renewable energy market development. The countries in this region have very different regulatory and legal systems affecting the renewable development and use. To revert this, the EU has already established a common policy framework and defined its regulatory regimes. On the other side, the southern Mediterranean countries have non-binding targets and underdeveloped institutional frameworks. In the recent years, more progress has been achieved on the national level. Hence, the countries are examined individually in this section, in terms of the RES regulations and electricity market developments, to illustrate the failure of the EU's single approach.

As mentioned at the beginning of chapter two, when developing countries have vast amounts of hydrocarbons, they perform poorly in other sectors. The widened social and economic divisions weaken governance and lead to corruption. The failure of check and balance systems causes the reforms in energy institutions to delay. Obviously, the lack of an efficient regulatory mechanism is at the root of the problem. Both in the national and regional sense the countries lack laws with any sanction power. They remain as rules with blurry targets. Hence, the EU and the private sector are hesitant to invest in this region before they agree on a common and binding regulatory system. Especially the renewable energies sector demands unified regulations if the electricity is to be transmitted using the grid system. Now, some crucial laws and institutions of the five North African countries' to promote the production and use of renewable energies are given. This would also indicate how individually oriented the states are and the fallacy on the side of the EU to treat them as a single entity.

4.2.1 Algeria

Three main principles have been adopted for the promotion of the renewable energy. The first one is to introduce several targets to increase the share of renewables

¹²⁴ Especially article 9 paves the way for new investments in renewable electricity capacity and infrastructure around the Mediterranean shores. Observatoire Mediterranéen de L'Energie, *Mediterranean Energy Perspective 2011*, (OME: Nanterre, 2011) p.193.

in the energy mix.¹²⁵ Moreover, reduction in CO₂ emission level by 50 million tons and diversification of the energy supply sources are the two other aims of the national energy strategy.¹²⁶ Some laws and regulations governed this policy. The two main laws were the No. 04-09 of August 14, 2004 on the promotion of RES in line with the framework of sustainable development and No. 02-01 of February 5, 2002 on distribution of gas and electricity.¹²⁷ These initiatives were taken to be able to get the feed-in tariffs offered by the EU. But there are still criteria concurring with the environmental protection rules, energy efficiency and security of electricity networks, before granting the tariffs. In terms of the natural gas issue, the EC launched the ‘Road Map accompanying the Association Agreement’ in 2008 including several policy areas economic reforms in the fields of trade and energy. Especially in the energy area a long-term harmonization with the Algerian energy market was aimed. In addition, closer cooperation within Maghreb and Sub-Saharan Africa to boost the energy market was proposed.¹²⁸ Again on the Algerian side, to be able to bring its market closer to the international standards, electricity law was enacted in 2002.¹²⁹ The gas monopolist Sonelgaz unbundled its activities and an independent regulatory body was found. After that several projects by IPPs started to take place in the following years. But considering the vast hydrocarbon resources and developed trade relations with the EU, it will be too optimistic to expect a great leap forward in the RES with the regulations that are mentioned above.

¹²⁵ 5 percent by 2015, 15 percent by 2020 and 40 percent by 2030. Ibid.

¹²⁶ Ministry of Energy and Mining, “Renewable Energy and Energy Efficiency Program,” Available at: http://www.mem-algeria.org/francais/uploads/enr/Programme_ENR_et_efficacite_energetique_en.pdf

¹²⁷ European Commission, “Paving the Way for the MSP: Country Report Algeria”, Available at: http://www.pavingtheway-msp.eu/index.php?option=com_downloads&task=category&cid=7&Itemid=56.

¹²⁸ Gonzalo Escribano, “Convergence towards Differentiation: The Case of Mediterranean Energy Corridors,” *Mediterranean Politics*, 15, no.2 (2010): 221.

¹²⁹ Algerian Electricity Law No. 02-01, 2002. *Journal officiel de la Republique Algerienne*, no. 13, (February 6, 2002) p.4

4.2.2 Egypt

In 2011 Egypt witnessed fundamental political and economic changes with the end of the Mubarak regime. Especially the energy sector has been affected as a developing sector. Considering its long history as an energy exporter the regulations are far too insufficient. In terms of renewables, the New and Renewable Energy Authority (NREA) regulates all the activities since it was established in 1986 under the Ministry of Electricity and Energy. It coordinates national, regional and international fields by the institutional framework for the implementation of renewable energy strategies. Promotion and introduction of new technologies; RE tests and certification; project evaluation and implementation are all in the jurisdiction of this authority. Currently there are no regulations that aim specifically the promotion of the use of RES. For instance, wind energy is sold via Power Purchase Agreements (PPA) according to each project. Hence, there is lack of support program for the private sector to get involved in the construction of large-scale RE plants.¹³⁰ Although the Supreme Energy Council approved the Egyptian Combined Renewable Energy Master Plan in 2010, due to the political turmoil not much progress has been achieved yet.¹³¹ In terms of natural gas, Egypt has become a significant producer and exporter of since the 2000s. The government created a Regulatory Agency for Gas and Oil affairs in 2009 in order to deregulate the energy sector, encourage competition and accelerate privatization.¹³² In the same year the Energy Efficiency Unit (EEU) was established for strategic planning and effective implementation. In addition, collecting and processing information to draft policies on energy efficiency were also targeted.¹³³ As of today, the EEU has not

¹³⁰ MEDREC, “Chapter II: Egypt”, Available at: <http://www.medrec.org/en/download.php?page=2>

¹³¹ African Development Bank, “Clean Energy Development in Egypt – 2012,” Available at: <http://www.afdb.org/fileadmin/uploads/afdb/Documents/Policy-Documents/Cata%20Energie%20Anglais.pdf>

¹³² Sherine Nasr, “Liberalization at a Price Tag,” *Al- Ahram*, 940 (March 26, 2009) Available at: <http://weekly.ahram.org.eg/2009/940/ec1.htm>

¹³³ Egyptian Cabinet of Ministers, “The Supreme Council of Energy: The Energy Efficiency Unit,” Available at: [www.jcee- eg.net/libdetails.asp?typeid=4](http://www.jcee-eg.net/libdetails.asp?typeid=4),

dedicated itself fully to the implementation of effective policies to promote energy efficiency.¹³⁴ Electricity markets' commercial orientation and privatization may proceed with the new Electricity Law.¹³⁵ Like Algeria, the regulatory changes started recently. It will take time for the regimes to consolidate and comply both with each other and with the EU. However, after the military coup last July, the country is divided between the Morsi and Sisi supporters that may make progress in any given sector difficult.

4.2.3 Libya

Muammar al-Gadhafi assumed power in 1969 and ran the country according to his ideology that was a combination of socialism and Islam. He was accused of using the oil revenues to support terrorist activities, leading to sanctions by the UN and the EU. Although they were lifted in the beginning of the 2000s, until then the energy regulatory system could not develop.¹³⁶ Prior to the 2011 revolution, the institutional setting did not support long-term sustainable policies. In 2008, the Ministry of Electricity and Energy had shifted all its responsibilities to the Energy Council chaired by the prime minister. In addition, the Renewable Energy Authority (REAOL) was founded in 2007 for managing and planning the introduction of RE.¹³⁷ However, there is still no regulatory agency in the country and no legislation covering the financial support for RE. In addition, there is also no legal basis for private investment in the energy sector. Since 2008, the Supreme Energy Council has the regulatory role and the

¹³⁴ African Development Bank, "Clean Energy Development in Egypt – 2012," Available at: <http://www.afdb.org/fileadmin/uploads/afdb/Documents/Policy-Documents/Cata%20Energie%20Anglais.pdf>

¹³⁵ Gawdat Bahgat, "Egypt's Energy Outlook: Opportunities and Challenges," *Mediterranean Quarterly* 24, no.1 (2013): 21.

¹³⁶ CIA, "The World Factbook : Libya," Available at: <https://www.cia.gov/library/publications/the-world-factbook/geos/ly.html>. Last Modified: October 31, 2013.

¹³⁷ IEA Country Energy Statistics 2009. http://www.iea.org/stats/countryresults.asp?COUNTRY_CODE=LY&Submit=Submit

following tasks: preparation of policies, development of energy sector structure, establishment of a pricing strategy and approval of foreign company contracts.¹³⁸ After the revolution, an energy sector policy could not be formulated, as a result of the lack of a coherent government, however Libya has now has the chance to start a new chapter in its history through the DESERTEC project. It can be a North African powerhouse with its RES potential and strategic location close to the major population centers in the Middle East and Europe.¹³⁹ It is, however, still too early to be hopeful considering again the political turmoil and lack of a single regulatory system governing all the North African countries. In addition, all the institutions that were established since the independence have served Gadhafi and his inner circle, thus a new democratic system is required to transform them and facilitate the collaboration with the EU.

4.2.4 Morocco

RES was included in the national policy in 1982 with the establishment of the Center for the Development of RES (CDER). Its main tasks were independent power generation, RES-based electrification and resource assessment.¹⁴⁰ For instance, the Morocco Agency for Solar Energy (MASEN) was established for the implementation of 2000 MW solar projects.¹⁴¹ The government has also put emphasis on empowering the legal and regulatory framework to facilitate the progress in RES. However, there were many obstacles on the way such as the lack of financial incentives, strategic guidance and information for the investors, insufficient experience and communication between the ministries. Hence, several legal reforms were implemented to overcome the

¹³⁸ Desertec Knowledge Platform, “Libya,” available at: http://knowledge.desertec.org/wiki/index.php5/Libya#cite_note-MVV_decon-0

¹³⁹ Investment U, “Will A New Libya Usher in the European Energy Revolution?” Available at: <http://www.investментu.com/2011/October/the-european-energy-revolution.html>. Last modified: October 25, 2011.

¹⁴⁰ MEDREC, “Chapter III: Morocco”, Available at: <http://www.medrec.org/en/download.php?page=2>

¹⁴¹ Masen, “Missions,” Available at: <http://www.masen.org.ma/index.php?id=5&lang=en#/>

problems and develop RES. For instance the decree 1-06-15 of 2006 obligates the public institutions to call for tenders to create competition for projects. In 2008 the Law 16-08 was enacted to support the development of wind energy by raising the ceiling for self-generation by industrial sites from 10 MW to 50 MW.¹⁴² Recently, the ‘Renewable Energy Law’ was enacted (no 13-09) aiming to promote electricity production from RES and sale by private or public entities. In addition, all producers were obliged to be connected to a national electricity grid.¹⁴³ These several attempts accelerated the process and today Morocco has the highest development of renewable energies among the Mediterranean Partner Countries (MPCs).¹⁴⁴ Nevertheless, the large-scale technology deployment encounters financial constraints. In addition, at the institutional level there are no incentives to promote the RE like feed-in tariffs. In terms of transmission of the energy produced, the national electricity grid transmission capacity and interconnection is inadequate. This again hinders the integration with the region and the EU.

4.2.5 Tunisia

As it is with the countries discussed above, the involvement of private sector in the energy production sector has been increasingly in line with the regulatory changes. Many amendments were made in the legislative framework for the promotion of energy efficiency and RES. In the energy efficiency area, several decrees¹⁴⁵ that date back to 1994 set amounts and criteria of granting the allowance inherent in investments.

¹⁴² European Commission, “Paving the Way for the MSP: Country Report Morocco”, Available at: http://www.pavingtheway-msp.eu/index.php?option=com_downloads&task=category&cid=7&Itemid=56

¹⁴³ Norton Rose Fulbright, “Renewable energy in Morocco,” Available at: <http://www.nortonrosefulbright.com/knowledge/publications/66419/renewable-energy-in-morocco> . Last Modified: May, 2012.

¹⁴⁴ Ibid.

¹⁴⁵ No 94-537 (March 10, 1994),no 2002-174 (January 28, 2002). Observatoire Mediterranéen de L’Energie, *Mediterranean Energy Perspective 2011*, (OME: Nanterre, 2011) p.86.

Likewise, in the field of renewables, decrees and laws again set lists of products that are crucial for the manufacture of plants in the 1990s.¹⁴⁶ Besides these regulatory changes, presidential decisions have also introduced some rules. The use of solar water heaters was made mandatory for public buildings, the widespread use of PV was a main focus, and the share of wind energy in electricity production was to be increased. In addition, VAT exemption for energy saving products, allowances for show-case projects and investments were some of the tax and financial incentives to boost the development of the RES.¹⁴⁷ Société Tunisienne de l'Electricité et du Gaz (STEG) was created in 1962 and until 1996 it was the monopoly for generation, transmission, distribution of electricity. Despite the amendments in the current legislative framework, the produced electricity can only be sold by STEG and no private generation is allowed. The capacities of generation equipment are not allowed to exceed the border subscribed with STEG's. In terms of electricity grid connection, currently a fifth line (Jendouba-Chefia) with Algeria, a double circuit line with Libya is finalized, and with Italy, submarine DC cable from El Haouaria to Partanna (Sicily) and two conversion stations will be completed by 2016.¹⁴⁸ Among the other North African countries mentioned above, Tunisia is making the most progress in the energy field, but still only an overall development of the region's regulatory system will enable the integration with the EU. After the discussions of the individual states' energy regulations and institutions, two of the large-scale RE initiatives are elaborated on in the next section.

4.3 Case Studies

The financial and regulatory barriers to the integration with the EU in the RE field has been discussed at length. In this section two of the large-scale RE initiatives, the MSP and DESERTEC, are elaborated upon. These case studies will enable the

¹⁴⁶ Decree no 95-744 (April 24, 1995), Law no 94-127: articles 88 & 89 (December 26, 1994) Ibid.

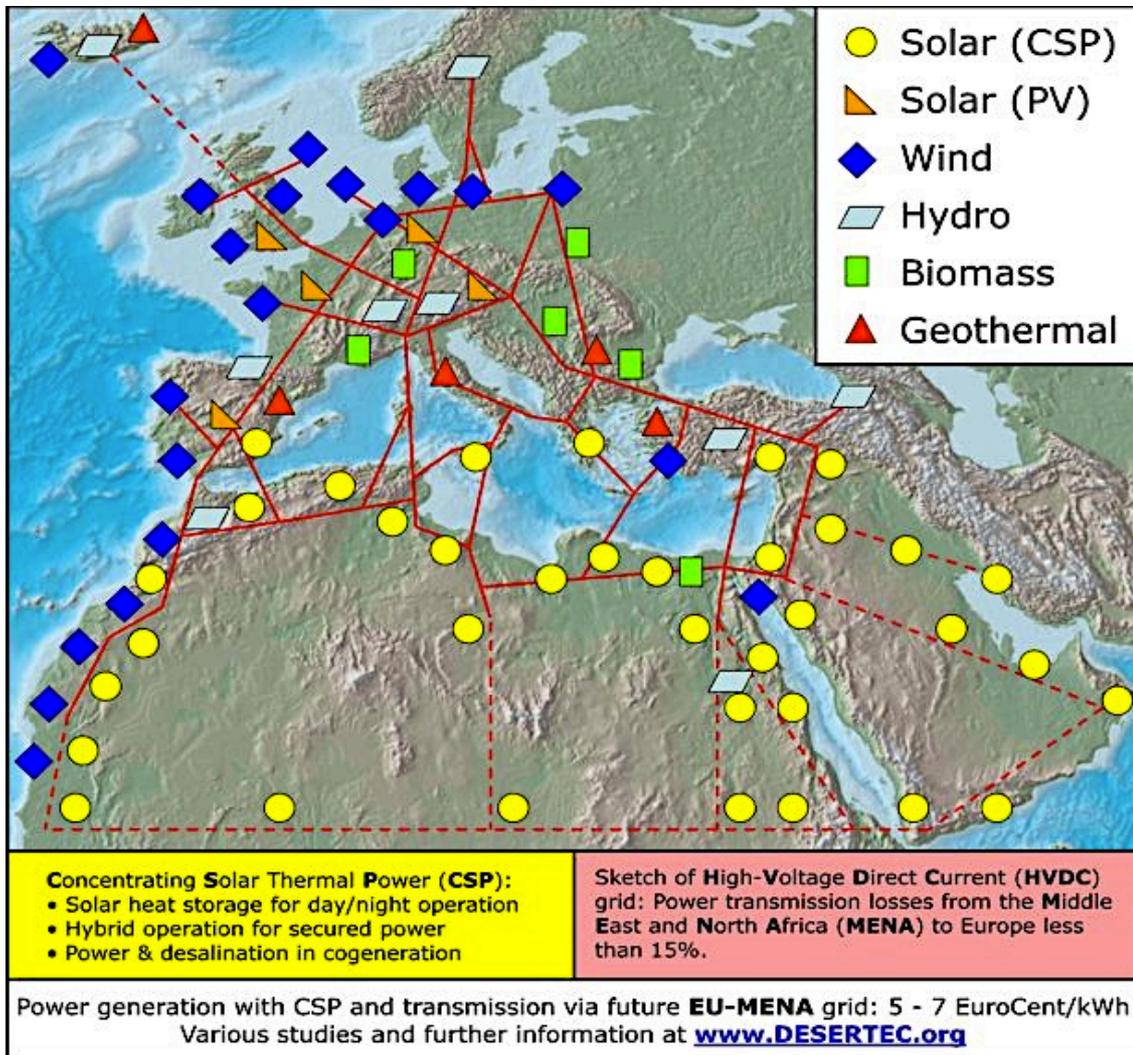
¹⁴⁷ MEDREC, "Chapter IV: Tunisia", Available at: <http://www.medrec.org/en/download.php?page=2>

¹⁴⁸ European Commission, "Paving the way for MSP: Country Report Tunisia", Available at: http://www.pavingthewaymsp.eu/index.php?option=com_downloads&task=category&cid=7&Itemid=56.

comprehension of the big picture and the barriers on the EU side. Both projects are grounded in the efforts to develop the Euro-Mediterranean energy collaboration. Since 1995, the EU has promoted its market norms to its southern neighbors. As liberalizing the markets leads to greater access of European companies and convergence of policies, cooperation in the energy field accelerates. The North African countries have shown little enthusiasm regarding the institutionalized initiatives under EuroMed and the ENP. These policies were perceived as narrow and lacking practicability. However, the UfM's project based approach has received support from stakeholders of the both sides of the shore. Hence the emergence of DESERTEC and the MSP has been welcomed at the beginning, but their relationship has been uneasy since they were launched. The fact that, they were initiated almost concurrently with similar objectives, raised doubts. Germany and France backed DESERTEC and the MSP respectively, which indicated an implicit competition between the two. Due to the rising energy demands and need to access modern energy production technologies states on the southern shore of the Mediterranean were interested in their gains rather than the dispute between the two. However, the financial and regulatory problems have damaged the process. In addition, the EU's market-oriented and one-size-fits-all approach has backfired once again. Below the details of both initiatives are discussed.

4.3.1 DESERTEC

Map 2: Sketch of a possible infrastructure for a sustainable supply of renewable power¹⁴⁹



DESERTEC Industries Initiatives (Dii) was launched in 2009 by twelve companies. Its main aim was to analyze and develop the economic, technical, political and ecological framework to generate environmentally friendly power in the deserts and infertile areas of North Africa. Writing business plans and finding the funds for large-scale solar plants are the two main tasks of the initiative. In addition, the development and reinforcement of electricity grids connecting North Africa to the EU are also crucial tasks related to its other goals. This ‘super-grid’ construction between the two shores of the Mediterranean will connect a major renewable energy source with demand areas. As

¹⁴⁹ Desertec Foundation, “Pictures,” Available at: <http://www.desertec.org/press/pictures/>

mentioned before the demand in the Maghreb is not large enough and the EU would like to have some returns for its large-scale investments in this region. The target is to meet approximately 15 percent (125 GW) of Europe's electricity demand by 2050. To be able to attain this ambitious aim Dii has four main strategies. To start with, effective and uniform regulations for investment have to be initiated; this is a very crucial point that was discussed in the previous section. Secondly, a long-term plan based on guidance and finance of investment must be drafted. Next, to make DESERTEC more concrete some initial solar, wind and transmission grid projects have to be put forward. Lastly, conducting detailed research on local conditions is essential. Related with the last point working teams were structured on the following areas: generation of energy in deserts, transportation of electricity to consumption centers, construction of energy markets, economic and social development potential for the MENA region.¹⁵⁰ Although in theory it is a perfect plan to bring together the energy hungry EU and North Africa with its great renewable energy potential, in reality financing such a huge project is difficult. For instance, the DESERTEC projects estimates € 42,000 million investment for CSP plants with 10 GW capacity by 2020 and another €5,000 million for two HVDC lines.¹⁵¹ Moreover, last year the two big funders Siemens and Bosch have decided to withdraw from the initiative.¹⁵² Other negative news came this year: the desert solar power partners DESERTEC Foundation and Dii decided to split up. They are the two principle supporters of a European renewable energy revolution through a vast desert solar generation grid.¹⁵³ Although both will go on with their own projects, it

¹⁵⁰ Observatoire Méditerranéen de L'Énergie, *Mediterranean Energy Perspective 2011*, (OME: Nanterre, 2011) pp. 69 – 70.

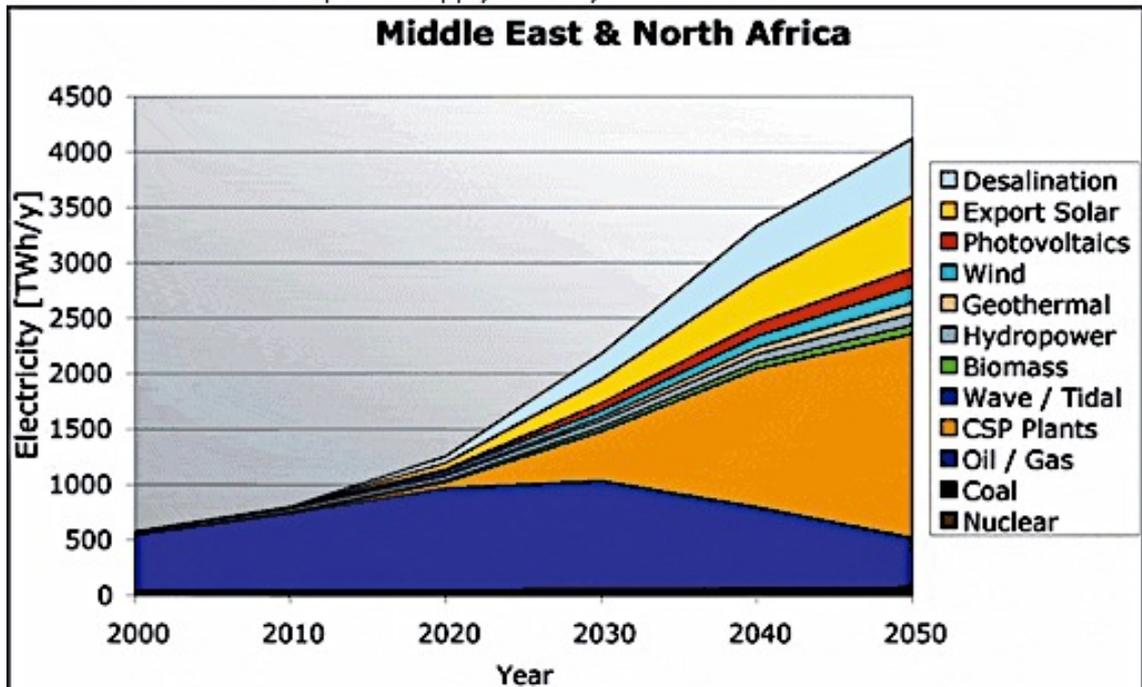
¹⁵¹ DLR Institute of Technical Thermodynamics, "Trans-Mediterranean Interconnection for Concentrating Solar Power: Final Report," Available at: http://www.dlr.de/tt/en/Portaldata/41/Resources/dokumente/institut/system/projects/TRANS-CSP_Full_Report_Final.pdf

¹⁵² BBC, "Solar storm as desert plan to power Europe falters," Available at: <http://www.bbc.co.uk/news/science-environment-20357167>. Last modified: November 19, 2012.

¹⁵³ The Guardian, "Desert solar power partners Desertec Foundation and Dii split up," Available at: <http://www.theguardian.com/environment/2013/jul/05/renewable-energy-desertec-foundation-dii>. Last modified: July 5, 2013.

surely has damaged the prestige of the project. Hence, DESERTEC has to find new funders and supporters in the near future; otherwise energy-hungry countries like China may soon enter the North African countries.

Figure 2: Climate and Power Supply Security Mix in MENA¹⁵⁴



4.3.2 The MSP

The Mediterranean Solar Plan was launched in 2010 and it was one of the priority projects of UfM to accelerate cooperation between the two shores of the Mediterranean. The challenges posed by the increasing energy demand, supply security and environmental sustainability are the other fields the MSP also addresses. Looking at Figure 2, it is no surprise that both project are focusing mainly on solar energy. Hence, with this particular emphasize on solar and also wind energies, the objective is to

¹⁵⁴ Solar Server, “Solar Plan (MSP) becomes the flagship project of the Union for the Mediterranean,” Available at: http://www.solarserver.com/solarmagazin/standpunkt_knees_e.html

develop 20 GW of renewable energy capacity by 2020.¹⁵⁵ Figure 6 above also indicates the growing share of RES in the energy mix. Supplying local markets with the electricity produced, improving energy efficiency, creating new industrial capacities and fostering regional energy market integration are some of the other goals of the MSP.¹⁵⁶ The launch of this project around the same time created a fuzzy relationship with DESERTEC. The similar prospects have generated some doubts as to the implicit competition between the MSP and DESERTEC. On the one side, the former colonial ruler France, a nuclear power technology producer, looks forward to promote its technologies to North Africa with the DESERTEC initiative. On the other side, Germany, the renewable energy expert, lobbies for the investments in this region under the scope of MSP.¹⁵⁷ Hence, the success of each project depends on how well they are promoted in the concerned countries. Furthermore, the national sentiments of the states shall be considered as well. Some would argue Europe may become the region's solar colonizer and the region itself will become a 'guinea pig' for large-scale investments in the renewables technology.¹⁵⁸ On the EU side, the MSP is characterized primarily as a political act aiming at diversification of energy supply. This also complies with the EU's 20-20-20 commitments and 2009 Directive on the promotion of renewables.¹⁵⁹ The initial decision to withdraw from nuclear power after the Fukushima nuclear disaster these projects took precedence. The Arab Spring has also pushed the EU member states to take action in North Africa, where major changes were occurring. The

¹⁵⁵ UfM Secretariat, "Building the MSP Master Plan: Discussion Paper," <http://www.ufmsecretariat.org/wp-content/uploads/2011/02/DISCUSSION-PAPER-MSP-Master-Plan.pdf>.

¹⁵⁶ Union for Mediterranean, "Mediterranean Solar Plan," Available at: <http://ufmsecretariat.org/mediterranean-solar-plan/> Last modified: January 19, 2012.

¹⁵⁷ Marcus Marktanner and Lana Salman, "economic and geopolitical dimensions of renewable vs. nuclear energy in North Africa," *Energy Policy* 39 (2011): 4483.

¹⁵⁸ *Ibid.* 4480.

¹⁵⁹ This directive regulates the mechanisms under which the joint projects between the EU and Southern Mediterranean countries can undertake. Several cooperation mechanisms allow the member states to agree on the degree of support and how to share the production with a view to the national objectives. Hakim Darbouche, "Energy Issues and the Prospects of the Mediterranean Solar Plan," *EUROMED* 15 p. 133.

probability of the countries becoming democratic regimes has placed emphasize back to this region. Hence, starting with economic cooperation was seen as the best option to pave the way to integration of the two shores of the Mediterranean. However, the plans just looked feasible on the paper, in reality the financial and regulatory problems are serious barriers.

Considering the period of transition to renewable energies, support is needed to advance the learning curve to be able to compete in the international market, but the lack of institutions raises the regulatory risk and hinders high capital intensity investments. In the mean time, creation of suitable conditions for a sustainable framework for long-term development is crucial. As discussed above, the five North African countries have been making progress in their legislations but at different rates. Still in many of the states, regulatory and institutional barriers exist, preventing further research on the potentials and deployment of projects. Even in 2009 before the Arab Spring, the RE investments in MENA region was stuck at 2,5 percent of the global investments made that year.¹⁶⁰ Findings also indicate that by February 2010, only 10,3 GW of renewable energy project proposals was identified in the MPCs, which only half of the 20 GW aim. Another €21 billion is needed by 2020 that is fivefold of the quantity spent in conventional electricity production in the last ten years.¹⁶¹ The Observatoire Méditerranéen de l'Énergie estimates €320 billion of investment is necessary to keep up with growing demand in the Southern Mediterranean countries until 2020.¹⁶² Since it requires a long time for the RES to be cost-competitive, funds are necessary to finance the projects. Public funds would have the biggest share, no country, with the exception

¹⁶⁰ UNEP, "Reforming Energy Subsidies: Opportunities to Contribute to the Climate Change. Division of Technology, Industry and Economics," Available at: http://www.unep.org/pdf/pressreleases/reforming_energy_subsidies.pdf.

¹⁶¹ Sophie Jablonski et. al. "The Mediterranean Solar Plan: Project proposals for renewable energy in the Mediterranean Partner Countries region," *Energy Policy* 44(2012) pp. 297-8.

¹⁶² Observatoire Méditerranéen de L'Énergie, *Mediterranean Energy Perspective 2011*, (OME: Nanterre, 2011) p.87.

of Algeria, no other state has put significant amount of money yet.¹⁶³ Private funds are also crucial, but with the lack of regulatory system, rules and liberal business environment the protection of investments cannot be guaranteed. Lastly, the international financial institutions may also give funds to the region and the same insecurities will be felt. From this discussion it is clear that without solving the regulatory issues the funds would not enter these countries.

The MSP was supposed to offer the opportunity for closer Euro-Mediterranean integration. The policy makers in the EU were hoping for the spillover effect, because the EU itself was based on the basic cooperation in coal and steel, before evolving into a strong political union. According to Mitrany, this is how closer integration among self-interested nation-states is formed. Hence, in the case of South Mediterranean itself, the aspiration was to start from economic collaboration, which in time would lead to closer integration in other areas as well. The MSP's ties with the institutional framework of UfM and ENP make it a cooperation program. Since the development of renewable energies require a common institutional and regulatory system, at least at the South-South level integration is inevitable. Such an improvement and harmonization would also lead to the installation of new generation and transmission capacities as shown in Table 8 below. However, until today a comprehensive regulatory convergence could not be achieved due to the reasons discussed above. The uncertainties concerning the kind of technologies, the quantity and the capacity of the electricity generation installations, the transmission grids, and funding mechanisms are all slowing down the process. Hence, without a realistic approach and careful consideration the credibility of the plan, it will fall even more.¹⁶⁴ Next, three immediate measures to be taken are elaborated upon in the coming section.

¹⁶³ Hakim Darbouche, "Energy Issues and the Prospects of the Mediterranean Solar Plan," *EUROMED* 15 p. 136

¹⁶⁴ Benavides P. Salas, "The Energy and the presidency and Spain in the EU," *Cuadernos de Energía* 27, (2010): 18-22.

4.4 Future Prospects

Several forums, summits, conferences since the declaration of UfM have emphasized the significance of Euro-Mediterranean regional integration. For instance, the 2005 Barcelona Euro-Mediterranean Summit adopted objectives with regard to electricity integration of Mashreq and Maghreb with the EU network.¹⁶⁵ In 2007 the Limassol Ministerial Conference came up with a Priority Action Plan that supports the reforms of the MPCs, integration of markets and harmonization.¹⁶⁶ However, these efforts did not result in further integration. There are three vital challenges to be dealt with: construction of transmission grids, designing a regulatory system encouraging integration, and an institutional framework binding the states.

The Lisbon Treaty and Community energy policy aim to promote the construction and development of trans-European national grid interconnection. Through technical standardization and cross-border interconnection they want to prompt joint projects and boost solidarity in the field of energy. There are three options available to transmit electricity between the two shores: development of existing grids between the Strait of Gibraltar and the Bosphorus, underwater connections with HVDC lines or combining the two.¹⁶⁷ Many studies have pointed out the supremacy of HVDC power lines to transmit electricity across borders with minimum losses in long distances. This would facilitate the optimum transmission of the electricity generated with renewable energies to European electricity markets. Another benefit is that the EU's energy security would also increase due to its diminishing dependency on Russian policy. The key point is to coordinate the layout of corridors of electricity generated from renewables and the policies that support them. Here again the significance of a credible regulatory system that encourages integration of renewables into the Euro-

¹⁶⁵ Europa, "Euromed Summit, Barcelona 27 – 28 November 2005," Available at: <http://eeas.europa.eu/euromed/summit1105/>

¹⁶⁶ Europa, "Andris Piebalgs' Press Release," Available at: http://europa.eu/rapid/press-release_SPEECH-07-827_en.htm

¹⁶⁷ MED – EMIP, "Medring Update: Analysis and proposals of Solutions for the Closure of the Ring and North-South Electrical Corridors," *Med-Emip* 1, no.2 (2010): 8.

Mediterranean area comes forward. The community itself is aware of the difficulty in establishing such a framework, thus it prefers FIT / bonus mechanisms. Since FITs are tied to production costs and in the Southern Mediterranean countries due to climate conditions the costs are low, the EU Member States may be encouraged to pay. Although the amount paid will be low, the states in the south may be induced to produce more. It is also a better idea to support feasible short-term plans that can be adapted to the regional level in the future. This can lead to more profitable investments and greater credibility of MSP. The right institutional framework can establish this regulatory system. Hence the last component of a successful integration in the Euro-Mediterranean area is possible with institutions that can form joint support projects. A harmonization even at a minimum level can ensure transparency, certification, and grid access. The EU can extend its Energy Community Treaty to these countries to shape the energy systems in line with the *acquis* in the long run, because currently most of the MPCs cannot adapt to the conditions of grid energies, gas and electricity.¹⁶⁸ Thus, rather than an one-size-fits-all approach, bilateral cooperation that can evolve first to sub-regional, and then to the regional level. This may allow for a softer transition to a more rigid integration.

At the national level, bilateral agreements allow the states to use their comparative natural resources advantages and take control over the share of support given to renewable energy. Hence, the EU has to take into consideration some key points while doing the bilateral agreements as well such as the longevity, certainty and transparency are the key components of a well-designed policy framework. The empowerment of the R&D field, the adjustment of the industries and investors depend on these conditions. Furthermore, co-development based on comprehensive dialogue among the governments is vital to keep the North African countries engaged in the process. Relating to the policy considerations, the design of the market shall also be carefully researched and adapted to the needs of the North African countries. Information sharing, risk mitigation mechanisms and capacity building are three essential axes of this design if they want to attract more investors. Especially more transparent information on the technology, projects and price can enable the risk

¹⁶⁸ Gonzalo Escribano, "Convergence towards Differentiation: The Case of Mediterranean Energy Corridors," *Mediterranean Politics* 15, no.2 (2010): 74.

premiums to fall, leading to tighter collaborations between the two sides. The next step after planning and investments is the infrastructure. The EU has formed two new organizations to deal with the promotion and transformation of the infrastructure: the Agency for the Cooperation of Energy Regulators (ACER) and the European Network of Transmission System Operators for Electricity (ENTSO-E).¹⁶⁹ The former is in charge of the development of common standards and approaches for cross-border commerce, the later promotes centralized long term planning, reliable operation and management for the transformation of existing infrastructure. Both of this agencies work on the European level and may extent their operations to its neighbors in the coming years. As mentioned in the previous paragraph, the EU can only integrate further with this region in the RE field if it takes into account the priorities of North African countries. Careful planning, precise policies, proper market design and modern electricity grids for transmission are the initial steps to be taken. Besides the contribution to the economies of both sides of the Mediterranean, these projects will add to the fight against climate change challenges as well. Hence, after the initial steps are taken, the stakeholders should take an more ambitious aims and impose stricter renewable targets.

¹⁶⁹ Although ACER aims at the completion of the EU's internal energy market for electricity and natural gas, this framework can be extended to the southern countries. ACER, "Mission and Objectives," Available at: http://www.acer.europa.eu/The_agency/Mission_and_Objectives/Pages/default.aspx, Likewise ENTSO-E is also serving the EU's transmission system operators, this system can also be exported to the North African countries. ENTSO-E, "Mission and Vision," Available at: <https://www.entsoe.eu/about-entso-e/inside-entso-e/mission-and-vision/>

CHAPTER 5

Conclusion

Energy is what provides light, heats houses, mobilizes people around the world and most importantly enables economic growth. As seen throughout the thesis energy issues cannot be separated from international relations. To begin with, oil and gas are limited commodities and demand for them increases due to growing population and consumerism. Although renewable energy sources constitute an alternative, only 2.5 percent of the demand is met by renewables at present.¹⁷⁰ There is no such thing as an energy island exempt from others; states need to cooperate and sometimes such interactions do not result well. Especially considering that soon 80 percent of the oil traded will originate from ‘non-liberal’ Russia, Middle East and Africa,¹⁷¹ none of which are easy to deal with, and importer countries may need to find means of compromising with them. In addition, relations between states have gotten more complicated and sophisticated; hence the fierce of IR has divided into subcategories to deal with the complexities. Energy security became one of such subcategories, particularly after the oil shocks of 1970s and gas cut-offs of the 2000s, when resources became bargaining chips.¹⁷² Moreover, maintaining and expanding energy supplies will

¹⁷⁰ Nick Butler, “Energy and IR: the Changing Agenda,” (speech, Johns Hopkins University, Washington, September 19, 2005) Available at: <http://www.bp.com/genericarticle.do?categoryId=98&contentId=7009436>

¹⁷¹ Daniel Yergin, *The Quest: Energy, Security and the Remaking of the Modern World*. (London: Allen Lane, 2011) p. 8.

¹⁷² Nazli Choucri, *International Politics of Energy Interdependence*, (Massachusetts: D.C. Heath, 1977) pp. 185-186.

entail \$16,000 billion of investment through 2030.¹⁷³ Exploiting new resources, building a modern infrastructure to transport and tanks to store them will be the main investment areas. These are crucial to maintaining a secure supply of energy and stability of the global market in the future. Interdependence in every field is unavoidable, but energy in particular is going to be a crucial area that links states. It will be the foremost molder of 21st century politics and economics. The EU was well aware of that fact and expanded its relations.

The 1990s was the decade of the great leap forward for the EU, as it was accepting new members and implementing its neighborhood policy to the others. The EU and the North African countries' energy cooperation have been perceived as a profitable one. On the North shore of the Mediterranean, the technologically advanced states are seeking to gain access to the renewable energy – rich south shore that lacks advanced ways to extract its sources. However, what is verified in theory may not always be true in practice. In the mid-1990s, after the collapse of the USSR, the EU was very keen to have close relations with all of its neighbors. After the 'big bang' enlargement in 1995, many of the 'Eastern bloc' countries became Member States and the EU also launched the ENP for the countries that had a slim chance to become full members. What the EU was expecting from the participants was that they conform to its norms. Some of the states were not content with this one-size-fits-all approach and proceeded with their own practices. Considering the authoritarian regimes in North Africa lasting for almost three decades this argument can be conformed. However, the EU was also keen to develop its trade relations with the countries among which some were former colonies of France and Britain. Since it is a win-win situation, most of the investments were suppose to be welcomed by the Maghreb states. However, this was not the case. To begin with, the EMP has suffered from failing attempts, while the UfM was not "another nail in the coffin"¹⁷⁴ of the vision inspiring the launch of EMP in 1995. All the efforts have predicated collaboration on security, region-building, political

¹⁷³ International Energy Agency, "World Energy Investment Outlook Sees Need for \$16,000 billion of Energy Investment through 2030, Highlights Major Challenges in Mobilising Capital," last modified November 4, 2003. Available at: http://www.iea.org/press/pressdetail.asp?PRESS_REL_ID=107.

¹⁷⁴ Kristina Kausch and Richard Youngs, "The end of the 'Euro-Mediterranean vision'," *International Affairs* 85, no. 5 (2009): 971.

modernization and economic matters, while in reality Europe and North Africa shifted further away. For instance in the economic field the investments remained limited and largely state-led that hindered grassroots economic activity. This statist development via big projects has offered little to the local economies. The same problems also apply to the energy field, although with the right projects there is much to be gained.

The 2006 and 2009 natural gas crisis with Russia and the nuclear disaster in Japan have also accelerated the process of energy diversification. Diminishing the dependency on Russia and varying the energy mix by increasing the share of renewables have been the priorities since the last decade. It has been trying hard to reach its RE targets of 2020 by encouraging the investments and providing FITs. Hence, with several initiatives and projects the untapped renewable potential on the southern shore of the Mediterranean was supposed to be seized upon. North African countries have their own domestic considerations: the fiscal imbalances, poverty trends, rapid population growth and increasing energy demands made even the exporter countries enthusiastic about the renewable energy projects. However, the chronic problems of energy subsidies, lack of infrastructure, regulatory issues and non-liberal electricity market structure have disrupted the process. In addition, the Arab uprisings and the political turmoil that followed added to the reverting. The EU was concerned with the regime changes and the security of the pipelines, which made them cautious about making further investments in this region. In addition, its fixation on Russia has not changed much and North Africa as an alternative power supplier has not caught enough attention. Even after the uprisings and change of leaders, the countries still have a long way to fully democratize. Thus, until the regimes consolidate, the financial and regulatory problems will prevent further integration in the energy field.

As long as the EU overlooks the North African states unique features and do not provide a tailor made approach to each one of them, the full collaboration will be delayed further, because this time the Europeanization approach which is a mechanical, market-based and ones-size-fits-all method has alienated the southern shore countries. The UfM has aimed to change this by having a bilateral and project-based procedure in terms of energy. So far the two biggest initiatives to boost the RES were the MSP and DESERTEC. Both of them started with ambitious goals, but they have again not taken into account the specific needs of the individual countries. Hence, such large-scale

projects are destined to fail if necessary regulatory and financial adjustments are not made. However, the adjustments should not emanate from the EU's norms and standards, but put the preferences of the host countries' to the front. After the Arab uprisings most of the states have gone through substantial changes that continue to this day. Obviously full liberalization of the regulatory and electricity market system will hold off. The EU should also carefully assess the transitions and adjust its policies accordingly. In addition, it is proven that solid projects have greater impact compared to vague aims of political and economic partnerships. Because solid projects are geared towards providing jobs and stimulate new industries that will enhance the lives of the population in general. Collaboration in energy has also pointed out that, if the EU shifts its emphasis from the neo-liberal and rules-based cooperation model to addressing 'practical' issues with specific projects, the impact is greater and partners are more willing to participate. All these issues and arguments discussed in this paragraph are controversial and would lead to further scholarly debates.

Energy relations have been and will continue to be a widely discussed topic. In the context of this thesis, the issues surrounding the Euro–Mediterranean area are going to spark several other scholarly debates. To begin with, theoretical discussion of the EMP, ENP and UfM has not been provided. The EU integration theories can be applied using the initiatives as case studies. Since, only two years have passed since the beginning of Arab uprisings, it is too early to come up with definitive results. Although some minor comments as to the effects on the RES investments were given, further debates shall follow in the coming years after the regimes stabilize. Bilateral agreements based on the specific needs of the countries have been offered as a better alternative to the current large-scale initiatives. However, there are still other solutions that do not necessarily involve the EU. After the regimes consolidate and democratize it may be possible to 'cure' the Dutch disease and form a union resembling the EU. Again, forceful arguments for and against this statement can be made. Two energy hungry giants India and China have not been major investors in this area, but they will most probably be in the future. They have a flexible investment approach compared to the EU, which would give it a hard time. Hence further scholarly debates of these scenarios are likely to follow.

Bibliography

Abouzeid, Raina. "Bouazizi: The Man Who Set Himself and Tunisia on Fire," *Times Magazine*, January 21, 2011. Available at: <http://www.time.com/time/magazine/article/0,9171,2044723,00.html>

ACER. "Mission and Objectives," Available at: http://www.acer.europa.eu/The_agency/Mission_and_Objectives/Pages/default.aspx,

Adler, Emanuel and Beverly Crawford. "Normative power: the European practice of region-building and the case of the Euro-Mediterranean partnership, in: E. Adler, F. Bicchieri, B. Crawford & R. A. Del Sarto (Eds) *The Convergence of Civilizations: Constructing a Mediterranean Region*. Toronto: University of Toronto Press.

African Development Bank and OECD. "African Economic Outlook 2008," Available at: http://www.oecd.org/document/33/0,3343,en_2649_15162846_39963489_1_1_1_1,00.html

African Development Bank. "Clean Energy Development in Egypt – 2012," Available at: <http://www.afdb.org/fileadmin/uploads/afdb/Documents/Policy-Documents/Cata%20Energie%20Anglais.pdf>

Aguilera Roberto F., "Assessing oil resources in the Middle East and North Africa," *OPEC Energy Review* 1, (2009): 47 - 69.

Al Jaber, Dr. Sultan Ahmed. "MENA energy transition strategy: A call for leadership in energy innovation", *Energy Strategy Reviews* 2, (2013): 5 – 7.

Algerian Electricity Law No. 02-01, 2002. *Journal officiel de la Republique Algerienne*, no. 13, (February 6, 2002).

Arce, Rafael de, Ramón Mahía, Eva Medina and Gonzalo Escibano. "A simulation of the economic impact of renewable energy in Morocco", *Energy Policy* 46 (2012): 335 – 345.

Awerbuch, Shimon and Raphael Sauter. "Exploiting the oil GDP effect to support renewables deployment," *Energy Policy* 34 (2006): 2805–2819.

Bahgat, Gawdat. "Egypt's Energy Outlook: Opportunities and Challenges," *Mediterranean Quarterly* 24, no.1 (2013): 12 – 37.

Bahgat, Gawdat. "Europe's energy security: challenges and opportunities," *International Affairs*. 82, no. 5 (2006): 12 - 37

Balfour, Rosa. "The Transformation of the Union for the Mediterranean," *Mediterranean Politics* 14, no.1 (2009): 99 – 105.

Balta, Paul. "Cultural Dialogue in the Euro-Mediterranean Partnership," *IEMED Annual Articles*. Available at: <http://www.iemed.org/anuari/2009/aarticles/a293.pdf>

Barbé, Ester and Anna Herranz Surrallés. "Dynamics of Convergence and Differentiation in Euro-Mediterranean Relations: Towards Flexible Region-Building or Fragmentation?" *Mediterranean Politics* 15, no. 2 (2010): 129 – 147.

Barbé, Esther. "The Barcelona Conference: Launching Pad of a Process," *Mediterranean Politics* 1, no. 1 (1996): 25–42.

Bassam Fattouh and Laura El-Katiri, "Energy subsidies in the Middle East and North Africa", *Energy Strategy Reviews* 2 (2013): 108 - 115.

Bassols. Andreu "Europe and the Arab (R)evolutions," IEMed Mediterranean Yearbook Med 2012.

BBC. "Solar storm as desert plan to power Europe Falter," Available at: <http://www.bbc.co.uk/news/science-environment-20357167>. Last modified: November 19, 2012.

Ben Abdallah, Moncef Samir Allal, Jacques Kappauf and Mourad Preure. "Towards A Euro-Mediterranean Energy Community: Moving from Import-Export to a New Regional Energy Model," *IPEMED*. Available at: http://www.ipemed.coop/adminIpemed/media/fich_article/1373880614_Towards%20a%20Euro-Mediterranean%20Energy%20Community.pdf

Bicchi, Federica. "The Union for the Mediterranean, or the Changing Context of the Euro-Mediterranean Relations," *Mediterranean Politics* 16, no.1 (2011): 3 - 19.

BP. "2013 Statistical Review", Available at: http://www.bp.com/content/dam/bp/pdf/statistical-review/statistical_review_of_world_energy_2013.pdf .

Brand, Bernhard and Jonas Zingerle. "The renewable energy targets of the Maghreb countries: Impact on electricity supply and conventional power markets", *Energy Policy* 39 (2011): 4411 – 4419.

Brunnschweiler, Christa N. and Erwin H. Bulte. "Economics: Linking Natural Resources to Slow Growth and More Conflict," *Science* 320, no. 5876 (2008): 616-628.

Butler, Nick. "Energy and IR: the Changing Agenda," (speech, Johns Hopkins University, Washington, September 19, 2005) Available at: <http://www.bp.com/genericarticle.do?categoryId=98&contentId=7009436>

Byman, Daniel. "Explaining the Western Response to the Arab Spring," *The Journal of Strategic Studies* 36, no. 2 (2013): 289 – 320.

Calleya, Stephen. *Navigating Regional Dynamics in the Post-Cold War World: Patterns of Relations in the Mediterranean Area*. Boston, MA: Dartmouth Publishing Company, 1997.

Cardwell, Paul James. "EuroMed, European Neighborhood Policy and the Union for the Mediterranean: Overlapping Policy Frames in the EU's Governance of the Mediterranean," *Journal of Common Market Studies* 49, no.2 (2011): 219 - 241.

Choucri, Nazli. *International Politics of Energy Interdependence*. Massachusetts: D.C. Heath, 1977.

CIA. "The World Factbook : Libya," Available at: <https://www.cia.gov/library/publications/the-world-factbook/geos/ly.html>. Last Modified: October 31, 2013.

Clean Investment Fund. "Funds & Programs," Available at: <https://www.climateinvestmentfunds.org/cif/node/2>

Clean Technology Fund. "Investment plan for concentrated solar power in the Middle East and North Africa region, 2009," Available at: http://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/ma_csp_ctf_investment_plan_111009.pdf

Crawford, Lesile and Andrew England. "Spanish gas groups fear reliance on Algeria," *Financial Times*, May 12, 2008. Available at: <http://www.ft.com/intl/cms/s/0/190b0332-1fb2-11dd-9216-000077b07658.html#axzz2mcDqRWRO>

Darbouche, Hakim. "Energy Issues and the Prospects of the Mediterranean Solar Plan," *EUROMED* 15 (2008): 131 - 136.

Darbouche, Hakim. "Third Time Lucky? Euro-Mediterranean Energy Cooperation under the Union for the Mediterranean," *Mediterranean Politics* 16, no. 1 (2011): 193 - 211.

Desertec Foundation. "Pictures," Available at: <http://www.desertec.org/press/pictures/>

Desertec Foundation, *Desertec White Book 4th Edition*. Bonn: Desertec 2009.

Desertec Knowledge Platform. “Libya,” available at: http://knowledge.desertec.org/wiki/index.php5/Libya#cite_note-MVV_decon-0

DLR Institute of Technical Thermodynamics. “Trans-Mediterranean Interconnection for Concentrating Solar Power: Final Report,” Available at: http://www.dlr.de/tt/en/Portaldata/41/Resources/dokumente/institut/system/projects/TRANS-CSP_Full_Report_Final.pdf

Egyptian Cabinet of Ministers. “The Supreme Council of Energy: The Energy Efficiency Unit,” Available at: www.jcee-eg.net/libdetails.asp?typeid=4,

EIA. “Egypt: Country Analysis Brief Overview”, Available at: <http://www.eia.gov/countries/country-data.cfm?fips=eg>. Last modified: July 31, 2013.

EIA. “Libya: Analysis”, Last modified: October 10, 2013. Available at: <http://www.eia.gov/countries/cab.cfm?fips=LY>

EIB. “Study on the Financing of Renewable Energy Investment in the Southern and Eastern Mediterranean Region,” Available at: http://www.eib.org/attachments/country/study_msp_en.pdf

ENTSO-E. “Mission and Vision,” Available at: <https://www.entsoe.eu/about-entso-e/inside-entso-e/mission-and-vision/>

ENTSO-E. “Union for the Coordination of the Transmission of Electricity,” Available at: <https://www.entsoe.eu/index.php?id=102>

Escribano, Gonzalo. “Convergence towards Differentiation: The Case of Mediterranean Energy Corridors,” *Mediterranean Politics*, 15, no.2 (2010): 211 - 229.

Europa. “Andris Piebalgs’ Press Release,” Available at: http://europa.eu/rapid/press-release_SPEECH-07-827_en.htm

Europa. “Euromed Summit, Barcelona 27 – 28 November 2005,” Available at: <http://eeas.europa.eu/euromed/summit1105/>

European Commission. “An external policy to serve Europe’s energy interests: paper from the Commission/SG/HR to the European Council,” Available at: http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressdata/EN/reports/90082.pdf

European Commission. “EU Bilateral Trade and Trade with the World,” Available at: http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_113421.pdf

European Commission. “Euro-Mediterranean Partnership: EuropeAid,” Available at: http://ec.europa.eu/europeaid/where/neighbourhood/regional-cooperation/documents/infonotes_enpisouth_regional_cooperation_en.pdf

European Commission. “Green paper: a European strategy for sustainable, secure and competitive energy,” Available at: http://europa.eu/documents/comm/green_papers/pdf/com2006_105_en.pdf

European Commission. “Green paper: towards a European strategy for the security of energy supply,” Available at: http://ec.europa.eu/energy/green-paper-energy-supply/doc/green_paper_energy_supply_en.pdf

European Commission. “Partnership for Democracy and Shared Prosperity with the Southern Mediterranean, COM(2011),” Available at: http://eeas.europa.eu/euromed/docs/com2011_200_en.pdf.

European Commission. “Paving the way for MSP: Country Report Morocco”, Available at: http://www.pavingtheway-msp.eu/index.php?option=com_downloads&task=category&cid=7&Itemid=56

European Commission. “Paving the way for MSP: Country Report Tunisia”, Available at: http://www.pavingtheway-msp.eu/index.php?option=com_downloads&task=category&cid=7&Itemid=56.

European Commission. “Paving the Way for the MSP: Country Report Algeria”, Available at: http://www.pavingtheway-msp.eu/index.php?option=com_downloads&task=category&cid=7&Itemid=56

Eurostat Detailed statistics on GDP and population growth can be accessed via: http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/introduction and <http://epp.eurostat.ec.europa.eu/portal/page/portal/population/introduction>

Fahmy, Sameh. “National Oil and Gas Strategy 2000,” Available at: www.ngv2006.com.

Feklyunina, Valentina. “Russia’s International Images and its Energy Policy: An Unreliable Supplier?” in *Europe-Asia Studies* 64, no. 3 (2012): 449 - 469.

Fischer, Joschka. “The Mediterranean crucible. Project Syndicate,” *Project Syndicate* (January 28, 2011) Available at: <http://www.project-syndicate.org/commentary/the-mediterranean-crucible>

Folkmanis, Andrew Janis “International and European market mechanisms in the climate change agenda – An assessment of their potential to trigger investments in the Mediterranean solar plan,” *Energy Policy* 39 (2011): 4490 -4496

Fritzsche, Kerstin Driss Zejli and Dennis Tänzler. “The relevance of global energy governance for Arab countries: The case of Morocco,” *Energy Policy* 39 (2011): 4497 – 4506.

Fulbright, Norton Rose. “Renewable energy in Morocco,” Available at: <http://www.nortonrosefulbright.com/knowledge/publications/66419/renewable-energy-in-morocco> . Last Modified: May, 2012.

Gaiser, Laris and Dejan Hribar. “Euro – Mediterranean Region: Resurged Geopolitical Importance,” *International Journal of Euro-Mediterranean Studies*. 5:57 (2012): 57 - 69.

Gauthier-Villars, David. “Sarkozy seeks to pair French, Algerian natural-gas firms,” *The Wall Street Journal*, June 29, 2007. Available at: <http://online.wsj.com/news/articles/SB118307740273352310>

Heydemann, Steven. “Upgrading authoritarianism in the Arab world,” *Saban Center Analysis Paper* 13, (Washington, DC: Brookings Institution). Available at <http://www.brookings.edu/papers/2007/10arabworld.aspx>

Huang, Ming-Yuan, Janaki R.R. Alavalapati, Douglas R. Carter, Matthew H. Langholtz. “Is the Choice of renewable portfolio standard random?” *Energy Policy* 35, (2007): 5571 – 5575.

IEA. “Country Energy Statistics 2009,” http://www.iea.org/stats/countryresults.asp?COUNTRY_CODE=LY&Submit=Submit

EIA. “Spain: Overview,” Last modified: May 30, 2013. Available at: <http://www.eia.gov/countries/country-data.cfm?fips=sp>

Index Mundi. “Net ODA received,” Available at: <http://www.indexmundi.com/facts/indicators/DT.ODA.ODAT.XP.ZS/compare?country=tn#country=dz:eg:iq:jo:ly:ma:sy:tn>

International Energy Agency. “Statistics by country and region. 2009,” Available at: <http://iea.org/Textbase/stats/index.asp>.

International Energy Agency. “World Energy Investment Outlook Sees Need for \$16,000 billion of Energy Investment through 2030, Highlights Major Challenges in

Mobilising Capital,” last modified November 4, 2003. Available at: http://www.iea.org/press/pressdetail.asp?PRESS_REL_ID=107.

International Energy Agency. *World Energy Outlook 2009*. Paris: IEA-OECD, 2009.

Investment U. “Will A New Libya Usher in the European Energy Revolution?” Available at: <http://www.investментu.com/2011/October/the-european-energy-revolution.html>. Last modified: October 25, 2011.

IRENA. "Renewable energy country profile: Libya". Available at: <http://www.irena.org/REmaps/countryprofiles/africa/Libya.pdf>

IRENA. “Vision and Mission,” Available at: <http://www.irena.org/menu/index.aspx?mnu=cat&PriMenuID=13&CatID=9>

Jablonski, Sophie Mohamad Tarhini, Manaf Touati, David Gonzales Garcia, Juan Alario. “The Mediterranean Solar Plan: Project proposals for renewable energy in the Mediterranean Partner Countries region,” *Energy Policy* 44 (2012): 291 – 300.

Kausch, Kristina. “The End of the (Southern) Neighborhood,” *Papers IEMed* 18 (2013): 10 – 18.

Kausch, Kristina and Richard Youngs. “The end of the ‘Euro-Mediterranean vision’,” *International Affairs* 85, no. 5 (2009): 963 – 975.

Kingdom of Morocco. “National Action Plan”, Available at: <http://www.unaoc.org/wp-content/uploads/National-Plan-of-Morocco.pdf>

Lacher, Wolfram and Dennis Kumetat. “The security of energy infrastructure and supply in North Africa and renewable energies in comparative perspective”, *Energy Policy* 39, (2011): 4466 - 4478.

Lexicon. “Dutch Disease,” Available at: <http://lexicon.ft.com/term?term=dutch-disease>

Marktanner, Marcus and Lana Salman, “Economic and geopolitical dimensions of renewable vs. nuclear energy in North Africa,” *Energy Policy* 39 (2011): 4479 - 4489.

Marques, António Cardoso and José Alberto Fuinhas. “Is renewable energy effective in promoting growth?” *Energy Policy* 46, (2012): 434 - 442.

Masen, “Missions,” Available at: <http://www.masen.org.ma/index.php?Id=5&lang=en#/>

MED – EMIP. “Medring Update: Analysis and proposals of Solutions for the Closure of the Ring and North-South Electrical Corridors,” *Med-Emip* 1, no.2 (2010): 4 - 28.

MEDREC. “Chapter II: Egypt”, Available
at: <http://www.medrec.org/en/download.php?page=2>

MEDREC. “Chapter III: Morocco”, Available
at: <http://www.medrec.org/en/download.php?page=2>

MEDREC. “Chapter IV: Tunisia”, Available
at: <http://www.medrec.org/en/download.php?page=2>

MEDREC. “Country Report: Algeria”, Available
at: <http://www.medrec.org/en/download.php?page=2>

Ministry of Electricity and Energy. “Egyptian Electricity Holding Company, Annual Report,” Available at: <http://www.moee.gov.eg/english/Takareer/2009-2010.pdf>

Ministry of Energy and Mining. “Renewable Energy and Energy Efficiency Program,” Available at: http://www.mem-algeria.org/francais/uploads/enr/Programme_ENR_et_efficacite_energetique_en.pdf

Mitrany, David A. *Working Peace System*. London: Royal Institute of International Affairs, 1943.

Morillas, Pol and Eduard Soler i Lecha, “The EU and the Arab Spring, One Year After: A View from the North,” *EuroMeSCo Brief* 39, (2012) Available
at: <http://www.euromesco.net/images/briefs/euromescobrief39.pdf>

Nasr, Sherine. “Liberalization at a Price Tag,” *Al- Ahram*, 940 (March 26, 2009)
Available at: <http://weekly.ahram.org.eg/2009/940/ec1.htm>

Natural Gas Europe, “Spanish firm buys stake in Medgaz Pipeline,” Available
at: <http://www.naturalgaseurope.com/spanish-firm-buys-stake-in-medgaz-pipeline>

Observatoire Mediterranéen de L’Energie, *Mediterranean Energy Perspective 2011*.
OME: Nanterre, 2011.

Pace, Michelle “Norm shifting from EMP to ENP: The EU as a norm entrepreneur in the south,” *Cambridge Review of International Affairs*, 20, no.4 (2007): 659–675.

Porkert, Manfred *The Theoretical Foundations of Chinese Medicine: Systems of Correspondence*. Cambridge: M.I.T. Press, 1974.

Price Waterhouse Coopers, "100% renewable electricity. A roadmap to 2050 for Europe and North Africa," Available at: http://www.pwc.co.uk/pdf/100_percent_renewable_electricity.pdf

Quemada, José Maria Marin and Gonzalo Escribano, "The Mediterranean Solar Plan as a Euro-Mediterranean Vector of Integration and Economic Development," *IEMed* (2011): 4 - 44.

Reegle. "Algerian CDER", Available at: <http://www.reegle.info/actors/3222/algerian-centre-for-renewable-energy-development.htm>

Reegle. "Energy Profile Libya", Available at: <http://www.reegle.info/countries/libya-energy-profile/LY>

Reuters. "France seals nuclear, aid deals with Tunisia," Available at: <http://uk.reuters.com/article/2009/04/23/idUKLN941296>

Reuters. "Libyan Berbers shut gas pipeline to Italy, cut major income source," Last modified: November 11, 2013. Available at: <http://www.reuters.com/article/2013/11/11/us-libya-gas-idUSBRE9AA0UT20131111>

Salama, Sammy. "Moroccan nuclear energy program gets boost from Russia," *WMD Insights*, Available at: http://www.wmdinsights.com/I11/I11_AF1_MoroccanNuclear.htm

Salas, Benavides P. "The Energy and the presidency and Spain in the EU," *Cuadernos de Energía* 27, (2010): 18-22.

Shaffer, Brenda. *Energy Politics*. Pennsylvania: University of Pennsylvania Press, 2010.

Schlumberger, Oliver. "The Ties that do not Bind: The Union for the Mediterranean and the Future of Euro-Arab Relations," *Mediterranean Politics* 16, no.1 (2011): 135 - 153.

Schlumberger, Oliver. "The UfM and the Future of Euro-Arab Relations," *Mediterranean Politics* 16, no.1 (2011): 147.

Shore, Cris. *Building Europe: The Cultural Politics of European Integration*. New York: Routledge, 2000.

Solar Server. "Solar Plan (MSP) becomes the flagship project of the Union for the Mediterranean," Available at: http://www.solarserver.com/solarmagazin/standpunkt_knees_e.html

Stambouli, Amine Boudghene. “Algerian renewable energy assessment: The challenge of sustainability,” *Energy Policy* 39, (2011): 4507 - 4519.

Stubb, Alexander C-G. “A categorization of differentiated integration,” *Journal of Common Market Studies* 13, no.2 (1996): 283–295.

Subbarao, Srikanth and Bob Lloyd, “Can the Clean Development Mechanism (CDM) deliver?” *Energy Policy* 39 (2011): 1600 -1611.

Supersberger, Nikolaus and Laura Führer, “Integration of renewable energies and nuclear power into North African Energy Systems: An Analysis of energy import and export effects”, *Energy Policy* 39 (2011): 4458 – 4465.

Supersberger, Nikolaus Dennis Tänzler, Kerstin Fritzsche, Dietmar Schüwer and Daniel Vallentin. “Energy systems in OPEC countries of the Middle East and North Africa. System analytic comparison of nuclear power, renewable energies and energy efficiency.” Available at: http://www.ps.boell.org/downloads/Wuppertal_Institut_Energy_Systems_OPEC_Countries.pdf

The Guardian. “Desert solar power partners Desertec Foundation and Dii split up,” Available at: <http://www.theguardian.com/environment/2013/jul/05/renewable-energy-desertec-foundation-dii>. Last modified: July 5, 2013.

The World Bank, “Foreign direct investment, net inflows,” Available at: <http://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD>

Trieb, Franz, Christoph Schillings, Thomas Pregger and Marlene O’Sullivan. “Solar electricity imports from the Middle East and North Africa to Europe,” *Energy Policy* 42, (2012) : 341 - 353.

U.S. Energy Information Administration. “Libya,” Last modified: October 10, 2013. Available at: <http://www.eia.gov/countries/cab.cfm?fips=LY>

UfM Secreteriat. “Building the MSP Master Plan: Discussion Paper,” <http://www.ufmsecretariat.org/wp-content/uploads/2011/02/DISCUSSION-PAPER-MSP-Master-Plan.pdf>.

UNEP, “Reforming Energy Subsidies: Opportunities to Contribute to the Climate Change. Division of Technology, Industry and Economics,” Available at: http://www.unep.org/pdf/pressreleases/reforming_energy_subsidies.pdf.

Union for Mediterranean, “Mediterranean Solar Plan,” Available at: <http://ufmsecretariat.org/mediterranean-solar-plan/> Last modified: January 19, 2012.

Union for the Mediterranean, “Projects,” Available at: <http://ufmsecretariat.org/projects/>

United Nations, *World Population Prospects: 2006 Revision*. New York: Population Division, Department of Economic and Social Affairs, UN, 2006.

Vilanova, Pere. ‘What if the Mediterranean would not or does not exist? Exploring heterodox hypothesis’ Paper presented at the Fourth Mediterranean Social and Political Research Meeting, Florence & Montecatini Terme 19 – 23 March 2003, organized by the Mediterranean Programme of the Robert Schuman Centre for Advanced Studies at the European University Institute.

World Bank. *World Development Indicators, 2010*. Available at: <http://data.worldbank.org/sites/default/files/wdi-final.pdf>

World Nuclear Association. “Emerging Nuclear Energy Countries,” Last Modified: November 2013, Available at: <http://www.world-nuclear.org/info/inf102.html>

Yergin, Daniel. *The Quest: Energy, Security and the Remaking of the Modern World*. London: Allen Lane, 2011.

Youngs, Richard. *Energy Security: Europe’s New Foreign Policy Challenge*. London: Routledge, 2009.

Zukrowska, Katarzyna, Paweł Czerpak, Aleksandra Galek, Małgorzata Grącik, Magda Hussain, Beata Jagiełło, Joanna Stryjek and Marcin Zbytniewski. “Building Euro-Med free trade agreement: how to improve the bilateral management strategies?” Go-Euromed Working Paper 0804 (2008). Available at : http://www.go-euromed.org/documents/working_paper/0804.pdf