

Paper prepared for the
Third Euroacademia Global Conference
Europe Inside-Out: Europe and Europeaness Exposed to Plural
Observers

Prague, 15 – 16 March 2013

This paper is a draft

Please do not cite

Energy and Environmental Challenges. The EU Approach and the Case of the Mediterranean Solar Plan

Maria Kottari

Department of International & European Studies

Panteion University of Social & Political Studies, Athens

Abstract

The present energy challenge the EU is trying to meet up, is getting the right balance between the increasing demand for affordable, reliable and sufficiently supplied energy sources and the need of tackling climate change maintaining environmental sustainability in the long term. Thus, the EU energy policy priorities are shaped around the nexus of supply security and energy efficiency within the operation of competitive energy markets. The European Commission's (EC) Directive 2009/ 28/EC, introducing the first mandatory national targets aiming at the further integration of renewable energy sources (RES) in the gross final energy consumption is evident for EU's commitment to shift to a more energy-efficient economy. This research paper proposal has three main aims; to offer a brief summary of the EU energy policy evolution, with emphasis at the 20-20-20 objectives and the promotion of RWE in the member –states energy mix; to identify the place of RES promotion in the EU's external energy and environmental governance initiatives and the pivotal role of environmental considerations in EU's energy cooperation initiatives with its energy partners; to discuss the case study of the *Mediterranean Solar Plan* (MSP), as an example of external EU initiative to meet its major energy and climate challenges. The MSP is one of six key initiatives of the Union for the Mediterranean (UfM), launched on July, 2008.

Key words: EU energy policy, 20-20-20 targets, renewable energy, Mediterranean Solar Plan

List of abbreviations

EU → European Union

EU-27 → 27 members of the European Union

EC → European Commission

EIB → European Investment Bank

ENPI → European Neighborhood and Partnership Instrument

ENTSO-E → European Network of Transmission System Operators for Electricity

FEMIP → Facility for Euro-Mediterranean Investment and Partnership

IRENA → International Renewable Energy Agency

MEDREG → Mediterranean Regulators for Electricity and Gas

MEDREP → Mediterranean Program of the Renewable Energy in the Mediterranean Region

MENA → Middle East and North Africa

MPCs → Mediterranean Partner Countries

MPS → Mediterranean Solar Plan

PV → Photo-Voltaic

RES → Renewable Energy Sources

TSOS → Transmission System Operators

UfM → Union for the Mediterranean

Introduction

This research paper will proceed in two main sections. The first section will cover an overview of EU energy policy evolution and structure, highlighting the pivotal role of the European Commission juxtaposing with the diverged energy interests of the EU member states based on the narration of the two dominant EU integration theories; the neofunctionalism/ institutionalism theory and the liberal intergovernmentalism theory. In a second level, this section will develop the prioritization process of the EU energy issues and their external dimension. The second section will advance on the study of the Mediterranean Solar Plan, a pilot project of the revived Euro-Mediterranean partnership under the Union for the Mediterranean. An ambitious RE project for electricity production, from solar power, destined to cover local energy needs of MENA countries but also to boost EU energy supply security via the produced power transportation covering the 15 % of the EU-27 electricity consumption. The project comes up with several technical and political issues hindering its deployment and its development as a key initiative for the further integration between the EU and MENA energy sectors in conjunction with additional benefits for the Euro-Mediterranean partnership in the economy and social aspects.

This paper is part of a wider doctoral research dealing with the EU energy policy structure and evolution in time, the external dimension of the EU energy policy with focus on the MCPs. The research paper attempts an empirical analysis of the provided data, literature, and primary sources related to the EU energy policy and the Euro-Mediterranean energy partnership, a theme that has not been studied in depth within the academia.

Understanding of the EU energy policy outline

The integration process of the energy sector in the EU is an ongoing process but so far, the energy sector, is the least successful one regarding the wider process of European integration. The emergence of the current EU structure is the result of the integration process of critical sectors of the Member States economies, initiated with the establishment of the European Communities based energy products, about half a century ago. Hitherto, the EU has not emerged with a real common energy policy.

Significant steps have been made regarding the international status of the EU on energy issues and the EU place in the international energy cooperation and the adoption of legislative initiatives and measures aiming at the further integration of the internal energy market. The obvious discrepancy between the triangle of objectives of EU energy policy, security-environmental sustainability – competitiveness, defined in the Green Papers and the Communications of European Commission and the strategic choices of the involved actors, whether they stand for national governments, interest groups or energy companies make the analysis of EU energy policy a rather difficult task. It should be also noted that the three pillars of EU energy policy- energy security, environmental sustainability and competitiveness, are often inconsistent making the development of energy policy a *sui generis* case if compared with the evolution the common agricultural policy, for example, was smoother and gradual process.

The key of understanding the structural evolvement of the EU energy policy is a parallel study in the basis of the two dominant theories regarding the European integration process; the neofunctionalism – institutionalism theory and the liberal intergovernmentalist theory. The neofunctionalism/ institutionalism theory advocates the principle of supranationality and the formation of international bodies aiming at the administration of nation's common interest; in the EU integration case, the neofunctionalism/institutionalism theory and the communitarian method of Jean Monnet interprets the role of EU bodies like the European Commission as trustee of the common European interests and its policy setting procedures. The liberal intergovernmentalism attempts to explain inter-country agreements and institutional integration options based on the theory of national modulation options which in turn is based on theories of international interdependence of liberal spectrum. Specifically, the EC has done important work in identifying positive aspects of the integration process in the energy sector especially in cases a common external energy policy, the internal energy market, a common approach to tackling the problem of climate change. The Commission's role in this level is direct, playing essentially the institutional role as a regulator of the agenda of topics that must be addressed by the EU, the guardian of the Treaties and the Community method of functioning of the Union and making decisions. The member-states, though, have a very determinant role in the formation of EU energy policy and governance as evidenced by the provision of the newly added energy chapter in the Lisbon Treaty of member-states retention of rights as far as energy mix, sources exploration and exploitation and relations with energy partners are concerned.

EU energy policy. Setting the agenda

Energy has become recently a priority issue of the EU's political agenda, while the EU attracts more and more the international energy interestⁱ. As stated in the previous section, energy is a policy area where the opposing national interests of the EU member-states are apparent. A coherent EU energy policy requires the convergence of national interests, both in the internal and external areas, and the build of a common energy strategy that will focus on the promotion of common EU interests.

The pace at which the EU is working towards a coherent and integrated energy policy, has been accelerated over the past ten years through a series of legislative acts, the addition of a separate chapter regarding energy in the Treaty of Lisbon and a ad-hoc energy Summit of the European Council in February 2011 entitled "*Europeanising Energy Policy: time to act*"ⁱⁱ. By these steps, EU is trying to make a transition from a "rhetoric level" to actions, through the completion of the internal energy market. At the same time issues such as climate change, pipelines diplomacy and the security of energy supply are now dealt with the same weight. In this process the contribution of the European Commission has been fundamental in the shaping of the EU energy policy goals and priorities well as in the coordination of the external energy partnerships.

Briefly, the the priorities of the EU energy policy are shaped around three main goals: energy markets competitiveness, sustainability and security of supply. The first two goals require, primarily, internal measures while the security of supply applies relies on the external dimension of the EU energy policy. The issue of competitiveness relies on a well functioning integrated internal EU energy market through the liberalization of electricity and gas markets. In 2007, the European Commission adopted a third package of legislative proposalsⁱⁱⁱ for electricity and gas markets in order to allow consumers to choose between different suppliers and to ensure market accessibility to all different suppliers. The EU policy on energy sustainability and renewable energy is set high in the agenda of the EC Communication in 2007 entitled "An Energy Policy for Europe"^{iv} and it acquired a legal status in 2009 with the binding targets known as the 20-20-20 goals. The 20-20-20 goals to be met on 2020 provide: 20% reduction of greenhouse effect coal emissions, the increase of the share of renewable, in the energy mix of the EU member states, by 20%, the reduction, by 20%, of the primary energy use, through the energy efficiency improvement.

In January 2008, the European Commission proposed binding legislation in order for the objectives 20-20-20 to be implemented. The "*EU package on climate and energy*"^v, which was agreed by the European Parliament and Council in December 2008 became law in June 2009. A recently published EC Communication entitled "*Renewable Energy: a major player in the European energy market*"^{vi} emphasises the contribution of renewable energy in the EU energy market integration and the need of further development after the 2020. According to this Communication the RE producers become significant players of the energy market as between 2010 and 2020 RE sector will continue to grow at a rate of 6.3% annually, while after 2020 the increase is expected to be smaller and reaches 1.3% per annum.

The external dimensions of the EU energy policy

The figures and the statistics alone can explain why ensuring a continuous and sufficient energy supply is the cornerstone of the EU energy policy. The EU increasing reliance on imported energy sources is the main distinct external dimension of the EU energy policy. According to the latest Eurostat data, the energy dependency on imported energy sources reached in 2009 the 53, 9 % for the EU-27, an increase of about 9% from 1999 levels. Besides, the fossil fuels dependence, increasing also steadily, ranges in high levels: 83, 5 % in 2009 for oil and 64,2 % for natural gas, always for EU-27.

“The EU Energy Policy: Engaging with Partners beyond our Borders”^{vii} is the title of the last European Commission’s (EC) Communication on the security of energy supply and international cooperation. It is the first Communication that calls member - states, in a compelling manner, to align with the EU objectives and actions in the external energy relations. The announcement enhances the external dimension of EU energy policy and aims towards a more coordinated strategy regarding the collaboration with its energy partners. The bilateral energy relations between the EU member- states and third party suppliers can lead to fragmentation of the internal market instead of the strengthening of energy supply security and energy market competitiveness. EU is trying to take some concrete steps to obtain, in a sense, the control of its member-states external energy relations^{viii}. In the first phase, it seeks to closely monitor all energy intergovernmental agreements the member states have concluded with third countries. In the long term, EU will try to renegotiate the same energy contracts taking into account the interests of the EU exclusively. An innovative aspect, proposed by this Communication, is the provision for a better information exchange mechanism, regarding energy agreements to be concluded by the member states. It also proposed a legal framework obliging Member States to provide the Commission with all necessary information for their new and older energy agreements. Before the entry into force of a new agreement, the Commission will be able to control the agreement’s compliance with the relevant EU legislation.

The environmental challenges and the EU objectives in the field of renewable energy set as a priority the investments for the so-called Mediterranean Solar Plan power, which will have a capacity of 20 GW (of which 5GW will be exported to the EU). The importance of the Mediterranean region is thus upgraded not only in area of hydrocarbons’ supply, but in energy production from renewable resources as well. The most innovative aspects of this EC Communication are related to the effort to revise the existing cooperation frameworks, which have been developed in the past and are not only in accordance with the goals of EU external energy policy, but promote is as well. In particular, the Communication proposes the further expansion of the Energy Community for South East Europe by 2016. It refers to the need of strengthening the energy relations with other major energy consumers, the industrialized countries, mainly USA, China and Japan and the emerging economies, notably India, Brazil and South Africa. The Communication puts in the agenda the strengthening and the modernization of the global energy governance system via the active cooperation between the EU and the International Energy Agency (IEA), the International Energy Forum (IEF), the International Partnership for Energy Efficiency Cooperation (IPEEC) and the International Renewable Energy Agency (IRENA).

EU external energy governance and the Mediterranean

The Mediterranean Solar Plan. At the origins of the project

The Mediterranean Solar Plan is a flagship project of the Union for the Mediterranean, launched in 2008 in Paris as a new attempt to revive the Euro-Mediterranean Partnership. Noting the relative scarcity of natural resources in Europe, the project focuses on increasing the share of renewable energy consumption in the continent. The project also aims to promote greater energy cooperation between the EU and non-European partners, including betting on converging interests between the two shores of the Mediterranean Sea.

Indeed, on the one hand the member countries of the European Union will benefit from a reliable, safe and durable. The other partner countries will invest in renewable energy and benefit from technology transfer and administrative expertise. The Mediterranean Solar Plan is also part of the logic of peace, democracy and shared prosperity, pillars similar to communitarian method upon which the founding treaties of the European Community - which originally also sought to organize and pooling energy resources of the continent. The project is not solely an energy project, but also corresponds to a coherent economic vision which aims to improve governance and regional integration. The project is however faced with legal constraints and economic consequences, which all partners will face in order to take all the profits of this new configuration.

The year 2007 is an important standpoint for the energy cooperation between the EU and the Mediterranean Partner Countries (MPCs)^{ix}. After the Euro-Mediterranean Ministerial Conference taken place in Limassol, a series of regional energy cooperation programs have been initiated under the European Neighborhood and Partnership Instrument like the Mediterranean Regulators for Electricity and Gas (MEDREG), the Mediterranean Energy Market Integration Program (MED-EMIP) and the Energy Efficiency in Construction sector in the Mediterranean (ENEC). Besides, the same Ministerial Conference set as goals the harmonization of energy policies and regulatory frameworks between the MPCs, the engagement on more sustainable strategies and the establishment of adequate frameworks for improving the investment climate.

The Mediterranean Solar Plan at that time, thus, stands for a much promising project meeting the “green” goals of the EU energy policy and, at the same time, creating a platform of further regional institutionalization of the EU external energy governance and the economic – social integration between the EU and the MPCs in a wider spectrum . However a more thorough analysis on the issue prevail not only the technical feasibility obstacles against the full implementation of the Mediterranean Solar Plan but mainly the inherent inconsistencies of the EU energy policy.

The Mediterranean Solar Plan. A technical assessment

The MSP has two main complementary targets: to develop 20 GW of renewable energy production (electricity), in order to address the growing energy demand, and to achieve significant energy efficiency initiatives & savings around the Mediterranean by 2020. At a second level, the MSP would initiate the development of electricity interconnections between the two shores of the Mediterranean and the rest of the member countries of the European Union. At present, traditional electric exchanges between countries of the southern Mediterranean are quite limited, especially among the Maghreb countries. The MPS should, further, support an integrated renewable market for the EU-MED region, based on a modern regulatory framework, aiming at the establishment of better RE infrastructures and demand-supply networks whilst addressing the common environmental threats of the EU-MED region.

The projects required for the full deployment of MPs will be promoted and financed by both private and public operators, mainly of EU interest, given the limited financial and human capital of MPCs to develop RE projects in such a degree. The DESERTEC RE global solution is the principal technical developer of MSP. DESERTEC was developed by the Trans-Mediterranean Renewable Energy Mediterranean Network, an international network consisted by politicians, academia and economists; the Club of Rome, the Hamburg Climate Protection Foundation, the research institutes for renewable sources of the governments of Morocco (CDER), Algeria (NEAL), Libya (CSES), Egypt (NREA), Jordan (NERC) and Yemen (Universities of Sana'a and Aden) and the German Aerospace Center (DLR) were the most significant contributors of DESERTEC development. DESERTEC is backed by large German industrial suppliers such as Siemens and ABB, large German energy companies Eon and RWE, and solar energy companies like Abengoa Solar, MAN Solar and Schott Solar. The DESERTEC prospects for 100, 000 megawatts of electricity production by Concentrated Solar Power (CSP) installations is alone an impressive figure. However, the most important preoccupation is the transfer of the produced electric power and the millions of cubic meters required for the CSP cooling, given the water scarcity in the African continent. Since 2009, an European Operator have started to be shaped under the European Network of Transmission System Operators for Electricity (ENTSO-E), an important step toward the development of pan –European electricity transmission infrastructures to be extended and include the Mediterranean Energy Ring.

Mediterranean Solar Plan. A political assessment

“Africa is a logical export partner given its historical and colonial connections to the EU as a supplier”^x. Besides, the geographical proximity and the untapped natural renewable resources of the African Mediterranean countries benefits the overall perspective of the EU energy policy priorities; reducing its reliance on fossil fuels importation, diversifying its energy sources and greening the energy mix of its member states.

The EU Council spring Summit in 2007^{xi} concludes with the most ambitious, worldwide, target over the green gas emissions reduction. The EU is engaged on reducing its greenhouse gas emissions up to 20% comparing to the 1990 levels. The Energy Policy for Europe Action Plan, agreed during the same Summit, calls the member –states to build, using the Community instruments, a dialogue with its African partner countries over the development of renewable energies potential, the EU accessibility to these sources and the building energy infrastructure of common interest. Additionally, the 9th Article of the Directive 2009/28/EC introducing binding legislative measures for the implementation of 20-20-20 set of goals, gives permission to the EU member-states to import green energy from third countries

The Mediterranean Solar Plan, incorporated in the updated Euro-Mediterranean Partnership launched as Union for the Mediterranean, appears to be a very suitable and highly promising project. Being part of the European Neighborhood and Partnership Instrument, the UfM and its related projects receive the institutional and financial support of the European Commission (precisely for the MCPs case the FEMIP under the aegis of the EIB). However, the MSP is still far from achieving a renewable energy transition for both MCPs and the EU itself. The reasons hindering the process can be found in two observations; the inconsistency and the discontinuity found in exercising the external energy policy from the part of EU member –states and the rather unsuccessful, hitherto, attempt of the UfM to accomplish the objectives pursued. The latter has been complicated, also, due to the Arab Spring events and their repercussions; most of the MCPs undergo transitions in their internal political scene whose assessment is a difficult endeavor.

The case of MSP reveals that the early choices of key member states are the main boundary towards the exercise of a, if not necessarily common, coordinated EU energy policy with the energy partners. More precisely, the development of the MSP is based primarily in the actions of DESERTEC foundation, serving German public and private interests. Germany is a pioneer, within the EU and in a global scale, of RES industry development. The re-launch of the Euro-Mediterranean Partnership was a French initiative, included in Nicola Sarkozy’s electoral course in 2007, but Germany expressed its disapproval. The Germany’s support was gained due to the inclusion of the MSP project in the UfM priority issues^{xii}. The two countries disagreed also on the role MSP was intended to play in EU – MCPs energy partnership; Germany viewed the MSP as a key project to promote regulatory convergence between EU and MCPs in the energy sector while France had a more “ technical” view of developing RES firstly as an instrument of reducing dependence on fossil fuels^{xiii}. Germany is so far the most active solar partner of MCPs. The EU , gaining strong support from the Commission, launched in 2010 the project “ Paving the way for the Mediterranean Solar Plan”^{xiv} with a view to promote the regulatory convergence and the knowledge transfer between the EU and the MCPs. The project aims, also, at the implementation promotion of sustainable energy policies within the MCPs and the improvement of a financial environment that would facilitate the investments in solar projects. However, this project also reveals the lack of uniformity regarding the EU member –states engagement in MPS progress.

Discussion and Conclusions

The MPS project is conceived as an effective response to the energy and climate challenges that the EU member-states and the MPCs are facing. However, energy and climate policies are not the only aspects that should be considered when looking at the Mediterranean Solar Plan concept. RE sources may play a similar role to the European Coal and Steel Communities and serve as an instrument of further integration between the EU and MPCs; the EU should facilitate a European neighborhood policy, with the adequate degree of institutionalization, that does not exclusively aim at the new members' admission in the Union but provides the framework for a consistent partnership with mutual benefits for the participants. In that perspective, a successful implementation of MSP requires innovative technology transfer, human capital training, "sustainable jobs" creation, RE policy management, in other words, the MPS project can produce further "spill-over" advantages especially for the MENA wider region. The sequent economic and social growth via the foreign direct investments and the technology – education transfers will act positively for the local communities and reduce, in turn, pressures at the EU states from economic driven immigration.

The overcoming of technical feasibility issues is of paramount amount for the next stages of the project especially the electricity power transfer to the European continent. As long as a pan-European electricity grid, connected with an equivalent in the MENA region, does not exist, the management of a potential electricity transfer from the MPCs to the EU is not feasible. The ENTSO-E development, under the EC initiatives, is still in its early stages of operation so it is difficult to access its coordination and operation capabilities. However, the ENTSO-E successful course shall be subjected to the harmonization of the converging national interests of the EU-27 with a view to a common EU perspective in the longer term.

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Author’s bio

Maria Kottari is a PhD Candidate in the Department of International and European Studies of Panteion University, specializing in Energy Politics & Energy Economics. Her doctoral dissertation concerns the Energy Policy of the European Union and the role of the Eastern Mediterranean. Her broader academic and research interests cover the European & global energy governance, the geopolitics of fossil fuel transportation and the renewable energy prospects. She can be contacted at: maria.kottari@gmail.com

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^v http://ec.europa.eu/clima/policies/package/index_en.htm

^{vi} Text available at the following link : <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0271:FIN:EN:PDF>

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^{xiii} *ibid*

^{xiv} The official webpage of the project: <http://www.pavingtheway-msp.eu/index.php>