

European Energy Journal



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Establishing a Regional Mediterranean Electricity Market: Assessment and Strategy¹

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1. Introduction: Why Do We Need a Harmonised Energy Market?

Harmonisation of energy markets is a market structure approach that recognises the reality of supply and demand in modern energy markets. Balance management, or appropriately balancing the equilibrium of supply and demand, is a major factor in effective provision of energy across a region (Van der Veen, et al., 2010). Energy markets across Europe are not fully harmonised, although the Nordic countries do have a more integrated energy market than most regions in Europe (Van der Veen, et al., 2010). In order to establish a balancing market (defined as ‘an institutional arrangement that establishes market-based balancing in deregulated power markets’ (Van der Veen, et al., 2010, p. 1)), a harmonised energy market across a given region is useful. Harmonisation of energy markets also addresses future needs, such as the need to standardise feed-in rules for renewable energy resources

(Munoz, Oschmann, & Tabara, 2007). Harmonisation of feed-in laws is a supply-based mechanism that prevents excessive returns and encourages even application of renewable energy development. Another mode of harmonisation is enabling cross-border transmission, which both increases the level of competition (particularly in a small market) and smoothes supply and demand spikes (Roggenkamp & Boisseleau, 2005). These are only a few of the clear economic reasons for designing a harmonised regional energy market.

There are existing models of integrated energy markets that show the potential benefits (as well as the potential difficulties) of harmonisation. The European Union (EU) is in the process of implementing a harmonised internal energy market. This internal energy market, regulated under 2003/54/EC and 2003/55/EC, is intended to maximise choice and expand competition in the electricity and natural gas markets as well as maximise efficiency of supply (Europa, 2008). The most recent regulation implementing this internal energy market (Regulation (EC) No. 714/2009) created a cross-border electricity exchange (Europa, 2010). The electricity exchange, the European Network of Transmission System Operators (ENTSO-E), is managed by the Agency for Cooperation of Energy Regulators and operates under a common set of transmis-

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sion rules (Europa, 2010). This cross-border electricity exchange provides a means of improving competition and providing increased consumer choice, as well as improving energy distribution efficiency (Roggenkamp & Boisseleau, 2005).

The Mediterranean region is not included in the European internal energy market, with the exception of the few Mediterranean countries that belong to the EU. However, this does not mean that the harmonised energy market model cannot be used across the Mediterranean region to achieve the same results in terms of competition and provision efficiency. It also does not mean that the Mediterranean region and the EU cannot cooperate to improve total energy efficiency and capacity. There are a number of initiatives, including the Euro-Mediterranean Partnership (EUROMED) and MEDRING (integrating the EU, Mediterranean and North African regions), acting to increase harmonisation of energy markets and transmission across the region. However, internal Mediterranean energy harmonisation is still an area for development. By improving Mediterranean internal energy markets, the region would have improved competition, transmission capacity and market efficiency. It would also improve the region's ability to contribute to and benefit from internal partnerships.

Our paper is organised as follows. The next section reviews the context in which the harmonisation of the Mediterranean electricity markets would take place; this serves as the basis for further discussion. The third section introduces the international experiences that may be considered as models for the Mediterranean electricity markets, and assesses their successes and criticalities. The fourth section outlines the empirical evidence for the current condition of electricity markets in the Mediterranean area. The fifth section presents a strategic roadmap to overcome existing criticalities and proceed towards the harmonisation of the Mediterranean electricity markets. Finally, some conclusions and implications are drawn.

2. Geopolitical Assessment of the Region: Geography, Infrastructure and Partnerships

The geography and existing energy infrastructure of the Mediterranean region are relevant for understanding the potential for a regional energy market. Based on this information, a proposed structure for a regional energy partnership is developed that addresses the need to balance demand and supply, increase competition and improve energy provision efficiency.

2.1 *The Geography and Existing Infrastructure of the Mediterranean*

Mediterranean countries are commonly defined as those that surround the Mediterranean Sea. However, many of these countries already are included in the EU internal energy market. For the purposes of this analysis, the Mediterranean countries included in the initial model are non-EU countries that are included in the EUROMED partnership. These countries include Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, the Occupied Palestinian Territory, Syria, Tunisia and Turkey (ENPI, 2012). Although these countries are currently working with the EU to form a regional energy cooperative, there is no internal market between them. The Northern Mediterranean part of the ring in the EUROMED partnership, which is primarily EU-integrated, includes Portugal, Spain, France, Italy, Slovenia, Croatia, Bosnia-Herzegovina, Montenegro, Serbia, Macedonia, Albania, Greece and Bulgaria (MED-EMIP, 2010).³

A full assessment of the existing energy infrastructure of these countries is outside the scope of this analysis. However, a recent report on existing transmission systems from EMIP provides a summary of the infrastructure available. This report indicates that total consumption of the Mediterranean ring is 350 TWh (as of 2008), increasing to 680 TWh in 2020 and 1200 TWh in 2030 (MED-EMIP, 2010). This represents an annualised growth

³ MEDEMIP (Support for the Enhanced Integration and the Improved Security of the Euro-Mediterranean Energy Market) is a regional EU funded project which started in 2007 and lasted until April 2012.

rate of 4% to 7% until 2020. The energy mix is expected to remain primarily gas-based (approximately 70%), with various contributions from nuclear power (3%), renewable sources (less than 10%, from a current maximum of 1%), oil (6%, from a current estimate of 10%) and coal (unknown) (MED-EMIP, 2010). Another change that is expected to take place during this period is that the dominance of hydropower in the renewable energy market is expected to fall as new renewable sources come online. Although each of these countries individually has an integrated energy infrastructure, a number of problems have been encountered during integration between countries. Among the most basic issues are power standards including voltage and AC/DC transmission (MED-EMIP, 2010). As such, the physical integration of electricity generation and transmission networks continues to be a work in progress.

2.2 Existing Cooperation Measures

There are some existing cooperation measures in place that should be taken into account. The EUROMED initiative, and the associated MEDRING transmission infrastructure integration project, is one of these measures. There are also associated generation capacity expansion projects. One of these programmes is the Mediterranean Solar Plan (MSP), which is intended to expand solar energy production

The efforts on the physical integration of generation and transmission have not addressed the need for new market and regulatory institutions

sion projects. One of these programmes is the Mediterranean Solar Plan (MSP), which is intended to expand solar energy production

along the South Mediterranean region (MEDREG, 2012a). The target for this plan is generation of 20 GW capacity. However, this programme faces institutional and funding challenges, including the need to find financial resources, increase the cross-border connections (already noted as problematic) and offer a rationale for the cost associated with renewable energy sources (MEDREG, 2012a). These existing cooperation measures are having some degree of success and are a necessary basis for the development of a harmonised energy market. Nonetheless, most of the efforts of EUROMED so far have been technical efforts focused on energy generation and transmission, and have not addressed the need for new market and regulatory institutions. These gaps are where the current analysis focuses.

2.3 Proposed Regional Mediterranean Energy Market

The goal of this paper is to propose a Regional Mediterranean Electricity Market (RMEM) to provide an institutional basis for competition and consumer choice, in support of the EUROMED efforts to expand cross-border transmission and expansion of energy generation capacity. The tasks envisioned for the RMEM will include improving systems reliability, reducing reserve margins, supporting reactive power and enabling energy exchanges that take advantage of daily and seasonal demand diversity and disparities in marginal production costs. In support of existing EUROMED programmes (as well as outside this framework), the RMEM will also focus on facilitating and promoting infrastructure development within the region.

The ultimate goal of the RMEM will be to optimise the regional supply and distribution of electricity. There are a number of economic and political considerations that need to be taken into account to create this optimisation. Under a standard economic model, this optimisation will only be possible with free competition and choice among industry agents (including generation and transmission companies, retail suppliers and consumers), supported by information symmetry and the ability to analyse alternatives rationally (Bhattacharyya,

2011). Thus, at the industry level, this suggests that all market suppliers should have open access to transmission networks and that consumers should be able to purchase energy from any company operating within the market. It also suggests that all costs, including generation, transmission, carbon offsets and profits, must be transparent and accessible to competitors, regulators and consumers. This does not suggest that the market should be fully deregulated.

At the firm level, there is the need in the short run for firms to cover all variable costs associated with generation and transmission (Varian, 2006). In the long run, the firm must also be able to cover its fixed costs (although the firm can remain functional without profit). However, full deregulation can enable market failures, such as excessive profit seeking or self-dealing that negatively affects the cost and availability of energy (Bhattacharyya, 2011). As such, the integrated market must continue to be regulated.

In order to implement the RMEM market integration, considerations will need to include:

- Security of supply – increasing energy efficiency and security and reducing the cost of supply;
- Sustainability – improving system reliability, efficiently using existing infrastructure and expanding infrastructure to cope with new demand and new energy sources, reduce emissions and expand use of renewable sources;
- Enabling necessary investments – using economies of scale and distribution of funds to ensure that the integrated market can invest in required capacity.

These issues have been identified from analysis of the EU cross-border programme as well as the EUROMED programme for the Mediterranean basin. For example, investment funding for EUROMED's solar expansion has proved to be difficult, while the EU cross-border programme has encountered difficulties in reducing the cost of supply and expanding renewable sources (Europa, 2010; MEDREG, 2012a). These challenges need to be considered when planning the RMEM market development trajectory.

2.4 Implementation Assessment

The RMEM, as envisioned, would encompass a number of different market mechanisms, including regulated balancing markets, spot markets and other types of trading as necessary to provide efficiency in the market. However, simply implementing a market will not be sufficient to promote efficient trading. Instead, regulatory and institutional harmonisation will need to precede the RMEM's establishment. There are several key legal and regulatory dimensions that will need to be taken into account.

The first issue is that cross-border market rules will need to be established. The harmonisation of grid codes, supply codes, and power exchanges will be required to make sure that countries can operate their exchanges in the proposed fashion. This issue was anticipated in the EU with the implementation of extensive wind power generation capabilities, as initially there was no clear grid code for wind power (Perez, Van Hertem, Driesen, & Belmans, 2006). It is likely that supply codes and power exchanges, commonly implemented on a national basis (Bhattacharyya, 2011), may face similar difficulties in implementation.

Identifying barriers to efficient trading among Mediterranean member states is already a key issue. There are already some barriers to efficient trade that are known within the region, such as transmission specifications (such as voltage and AC/DC transmission) (MED-EMIP, 2010). These barriers have prevented the full integration of the region, and have even resulted in failure of integration of individual grids. Some progress has been made by ENTSO-E within the EU (Europa, 2010), and this group would be a likely candidate to undertake harmonisation of codes across EU borders as well. However, this integration would require national authorities to work with ENTSO -E and each other in order to arrive at common trading specifications.

In addition to technical barriers, there may be legal barriers to trading between countries. Within the EU, regulations 2003/54/EC and

2003/55/EC clearly support the development of an internal energy market, including generation, transmission and trade. European Neighbourhood Initiative regulations also support the development of programmes such as EUROMED from the European perspective (MED-EMIP, 2010). However, this still raises the question of legal barriers and enablers from non-EU countries, as well as the political will to undertake the integration of markets. The countries involved are also at different positions regarding the deregulation of energy markets and their oversight. This will need to be considered before setting out a specific plan for market integration.

Once technical specifications and legal positions have been established for each country within the Mediterranean region, the rules of the harmonised and integrated RMEM market itself will need to be established. There are a number of considerations that will need to be taken into account. One of the most basic will be internal and external energy trading rules set by the EU. Directives 2003/54/EC and 2003/55/EC and their associated regulations specify the internal energy market rules for the EU, but do not address integration of non-EU countries. Integration of non-EU countries would most likely fall under the EUROMED initiative, which is intended to increase integration and improve sustainability of generation and transmission facilities in the European neighbourhood of the Mediterranean (MED-EMIP, 2010).

Another concern will be trade barriers such as import limitations or price agreement limitations, commonly classed as price controls. Governments may use price controls in order to protect domestic suppliers or provide a price ceiling for energy consumers (Bhattacharyya, 2011). However, they also may prevent efficiency in provision of the energy supply or artificially suppress costs, making energy generation ultimately unsustainable (Bhattacharyya, 2011; Varian, 2006). Because of this, governments must be encouraged either to eliminate these price controls or to limit their use to emergency situations.

Finally, environmental rules must be established and held in common across member countries. Energy generation is vulnerable to environmental externalities, or conditions in which energy-producing firms lower their costs by externalising environmental damage, such as avoiding clean-up or failing to implement advanced emissions controls (Bhattacharyya, 2011). These environmental externalities not only result in long-term damage to the environment, but also artificially lower production costs for some companies. In a perfectly competitive market, this type of artificial lowering of costs could be devastating to companies that do not engage in this externalisation, because it will reduce market cost below their cost of production (Varian, 2006). As such, in order for the market to remain competitive, it will be necessary for environmental rules regarding energy generation to be harmonised – and even more importantly, evenly enforced – across the member countries of RMEM.

3. Lessons from the International Experience

The proposed RMEM is not the first regional energy exchange in the world. On the contrary, there are a number of regional energy markets at various points of development that provide helpful lessons for its development. Some examples of large-scale international exchanges include the European internal energy market and cross-border exchanges between the United States and Canada. The experiences of these existing markets offer some principles that can be considered when planning the RMEM. Six basic principles that have been identified from previous integration efforts are discussed below.

3.1 There is no single approach

The most obvious principle is that there is no single approach to regional integration. Establishment of a best practices model of energy market trading, in which the ideal or optimised market framework is identified and implemented, is a common concern of EU energy regulators (Keating, 2012). However, as Keating (2012) points out, the development of

energy market regulation is actually contingent on various factors, such as existing markets and sociocultural factors, social and environmental perspectives, financial concerns and existing infrastructure and trading conditions, private sector involvement and other aspects of development. This position of contingency suggests that a best practices model is not the most appropriate model for energy market formation, even though best practices are sensible under a classical rational choice theory. A better basis for understanding how policy decisions are made (and as such, how regional markets may be best structured) is bounded rationality. Bounded rationality suggests that decisions are made based on rational analysis, given the type of contingencies above (rather than ignoring them) (Munro, 2009). This changed assumption means that the right model for a regional energy trading market is likely to depend on the precise structure of the region, rather than on a set of globally established best practice. However, it does not mean that previous lessons learnt (such as the technical failure of AC synchronisation between Turkey and Libya (MED-EMIP, 2010)) cannot be taken into account when planning the new RMEM market.

3.2 *There are various levels of integration*

Although it seems like an obvious statement, integration importantly does not have to occur on a specific level. Instead, regional integration may occur at various levels. For example, the EUROMED power integration has mostly focused on technical integration (transmission and generation capacity building and associated standards) (MED-EMIP, 2010). It has also not attempted integration on a regional level, but instead has begun with integration of neighbouring countries such as Turkey, and then Libya. The political structure and size of national units, as well as distance, can affect the efficiency of integration, though the full integration of a region would obviously offer the best efficiency, as shown by a comparative analysis of integrations associated with the Nordic Council, MERCOSUR and NAFTA (Pineau, Hira, & Froschauer, 2004). However, this analysis also showed that benefits were

seen even under conditions of less than total integration. For example, MERCOSUR (in South America's Southern Cone) maintained independent energy policies but had international transmission capabilities, and still realised some benefits from regional integration such as expanded cross-border capacity. This region was particularly strong in bilateral relationships between countries, allowing for gradual improvement. This example shows that while full regional integration may be ideal, it is not necessary (at least at first) to gain efficiencies in cross-border trading markets.

3.3 *Any structure can offer benefits*

The case of the Nordic Council (Norway, Sweden, Finland, Denmark and Iceland) is unique in the level of integration and efficiency gains that have been realised through this integration (Pineau et al, 2004). In contrast,

In the Nordic countries, national sovereignty has been respected by undertaking separate efficiency plans while developing an integrated international trading market

the EU internal energy market continues to struggle, as a whole, with the development of common generation, transmission and trading (Europa, 2008). The difference between these two regional organisations is, at least in part, recognition of national priorities such as domestic energy security and sovereignty

issues. In the Nordic countries, national sovereignty has been respected by undertaking separate energy efficiency plans and initiatives while at the same time developing a tightly integrated international trading market (Pineau et al, 2004). Overall planning of the regional system is such that demand and supply is balanced, particularly in terms of seasonal supply and demand variances. This level of integration is not required for successful development of cross-border initiatives, however. For example, the MSP is intended to expand solar supply in the South Mediterranean (which has a clear advantage in this area over northern Europe) (MEDREG, 2012a). This programme will be implemented, and will provide a clear benefit for the countries involved, even though there are differing national priorities involved. However, this is only possible because of distribution that is seen to be fair between countries involved, including cost-sharing and energy-sharing plans. This suggests that explicit mechanisms to share benefits, like share allocations, is a means of improving uptake of cross-border projects like RMEM or MSP.

3.4 *Regional institutions are crucial*

It is a truism that the effectiveness of a market depends on the effectiveness of the institutions that underlie it. Markets, including energy markets, cannot operate without a shared understanding of legal principles, property rights and a central means of exchange (Snowdon & Vane, 2005). In the EU, there are multiple levels of regional institution that support shared markets such as the EU internal energy market and, to a lesser extent, EUROMED. These institutions include law-making bodies such as the European Parliament, the Council of the European Union, the European Commission, the European Central Bank and other agencies. Equally important for the EUROMED initiative are institutions such as MEDREG (which gathers existing Mediterranean energy regulators and is supported by the EU), who provide regulatory guidance from a shared super-national perspective. The Nordic Council also has shared energy regulatory bodies, though MERCOSUR and NAFTA

regions do not have this type of regional integration (Pineau et al, 2004). Of these, the most effective regulators have already an established role in regulation locally, like MEDREG, rather than being built externally. This suggests that existing regulatory and institutional arrangements should be expanded where possible, before new institutions are put into place.

3.5 *Technical and regulatory standards must be harmonised*

One of the most telling examples of failure in regional regulation is also one of the simplest. Recently, it was determined that Turkey and Libya could not be fully integrated because of difference in AC/DC transmission standards (MED-EMIP, 2010). This relatively simple technical issue, and its effect on bilateral and regional integration, shows how important it is that technical and regulatory standards should be integrated. Without technical and regulatory implementation, it will not be possible to reach full integration in a cross-border perfectly competitive market, because products will not be fully equivalent (Varian, 2006). The failure to integrate issues like grid codes, supply codes and other aspects of generation and transmission could mean that it will not be possible for countries to supply each other, regardless of how well-structured a regional market is. Of course, the extent of integration of technical and regulatory standards will depend on the extent of regional integration. However, over time national regulations will need to move towards a common regulatory framework that is either implemented on a national basis or through a regional regulatory body. This is a point of significant struggle for many existing regional markets; for example, the EU continues to struggle with integration of technical and regulatory standards for its internal energy market (Europa, 2010). The most integrated regional market in the world, the Nordic Council, uses a regional regulatory body as well as fully integrated regional infrastructure and technology standards (Pineau et al, 2004). However, it should be noted that this could be difficult for many regions to achieve, as the Nordic Council only has five member

countries. Thus, a less ambitious beginning of harmonisation of national policies may be more appropriate.

3.6 Flexibility in power sector reform is required

The approach chosen for the EU internal energy market, as well as the EUROMED regional integration, presumes that there will be a fully competitive power market (Europa, 2010; MED-EMIP, 2010). However, this assumption is not necessarily appropriate for all conditions of integration. Some countries, especially those currently outside the EU, do not have fully deregulated and liberalised power markets, for a variety of reasons. For example, governments may be concerned about protecting domestic power production or may maintain tight control over power supplies using government monopolies in order to avoid rent-seeking or private monopoly advantage (Bhattacharyya, 2011). Although these conditions will slow integration, these are valid concerns and should not eliminate countries with lower levels of power sector reform from taking part in regional exchanges. As comparison of NAFTA, MERCOSUR and Nordic Council regional integration shows, it is important for levels of regulation to be similar or even harmonised in order for integration to be successful (Pineau et al, 2004). However, this does not imply that countries need to

deregulate fully or liberalise markets to take part. Furthermore, fully competitive power markets could actually reduce integration capability, by reducing the amount of long-term infrastructure financing from private-sector firms unwilling to invest in a relatively small market (Bhattacharyya, 2011). Thus, deregulation and competition should not necessarily be considered prerequisites to market integration.

4. Potential for Establishing a Regional Electricity Market in the Mediterranean Region

There is a great potential for Mediterranean countries to establish steadily the targeted RMEM. This potential is based on the fact that the Mediterranean region already embraces some form of sub-regional electricity markets (sub-RMEM). These markets include (MEDREG, 2010):

- Iberian Market (Spain – Portugal)
- France – Belgium – Netherlands
- Italian Market
- Turkey
- SWM (South West Mediterranean) countries
- SEM (South East Mediterranean) countries
- SEE (South Eastern European) countries

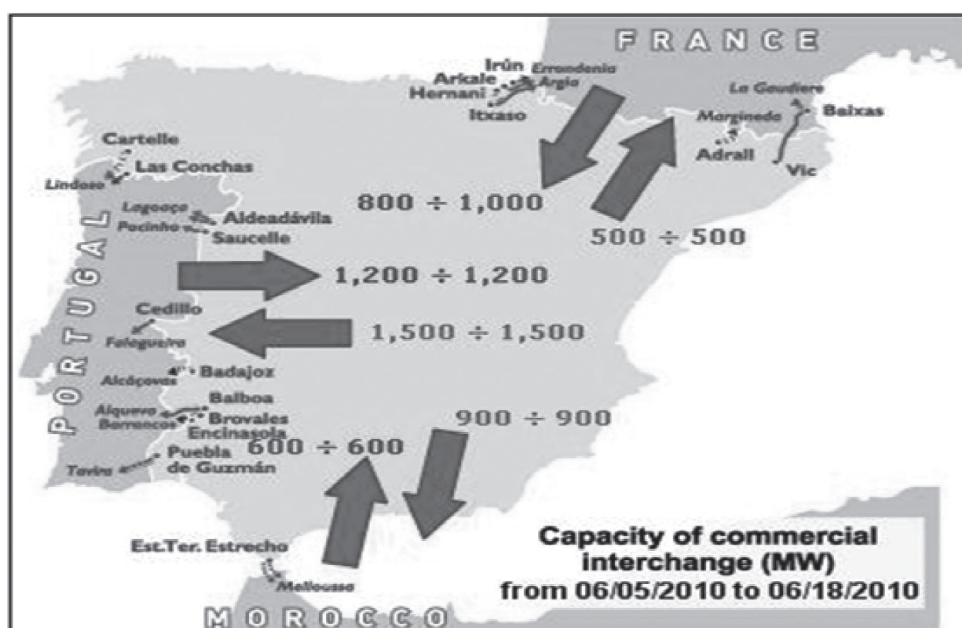


Figure 1: Iberian Market (World Energy Council, 2010)

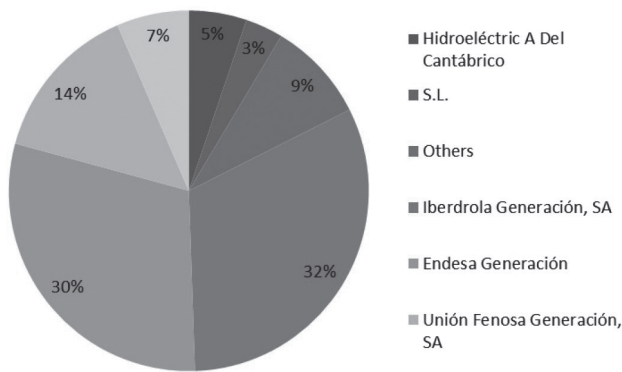


Figure 2: Market shares in the Spanish market (World Energy Council, 2010)

4.1 North Mediterranean

In 2004, the European Commission (EC) highlighted eight potential regional electricity markets (Europa, 2004). These markets are the Nordic Market (Denmark, Norway, Sweden and Finland), Great Britain and Ireland, the West Market (France, Germany, Austria, Switzerland and Benelux), the Iberian Market (Portugal and Spain), the Italian Market, the North East Market (Poland, Czech Republic, Slovakia, Hungary and Slovenia), the South East Market (the Balkan countries) and the Baltic (Market – Lithuania, Latvia and Estonia) (World Energy Council, 2010).

In this section of the paper, we are concerned with RMEMs within the Mediterranean region, namely the Iberian Market (Portugal and Spain) and the Italian Market. However,

having some of the Mediterranean countries engaged in RMEMs outside the Mediterranean territories would enrich the experience within the region in this regard.

4.1.1 The Iberian Market: Spain and Portugal

MIBEL, the wholesale market for Spain and Portugal, started on July 2007. The legal framework for MIBEL is based on the ‘Agreement between the Portuguese Republic and the Kingdom of Spain relative to the constitution of an Iberian Electrical Energy Market.’ The MIBEL Agreement set the general principles for managing the overall organisation of the market, setting the framework for the spot market and the derivatives market (OMIP). The Operador del Mercado Iberico de Energía – Polo Español (OMEL) operates this spot market. At its start, the Iberian Market featured a single daily market and a mechanism for the allocation of capacity by implicit auction. When congestion develops at the Spanish-Portuguese interconnection, market splitting is triggered. Figures 1 and 2 respectively show the Iberian market and the market shares in OMEL (World Energy Council, 2010).

The launch of the MIBEL daily market was one of the most important developments in the Portuguese wholesale market. All power purchase agreements (PPAs) held by the

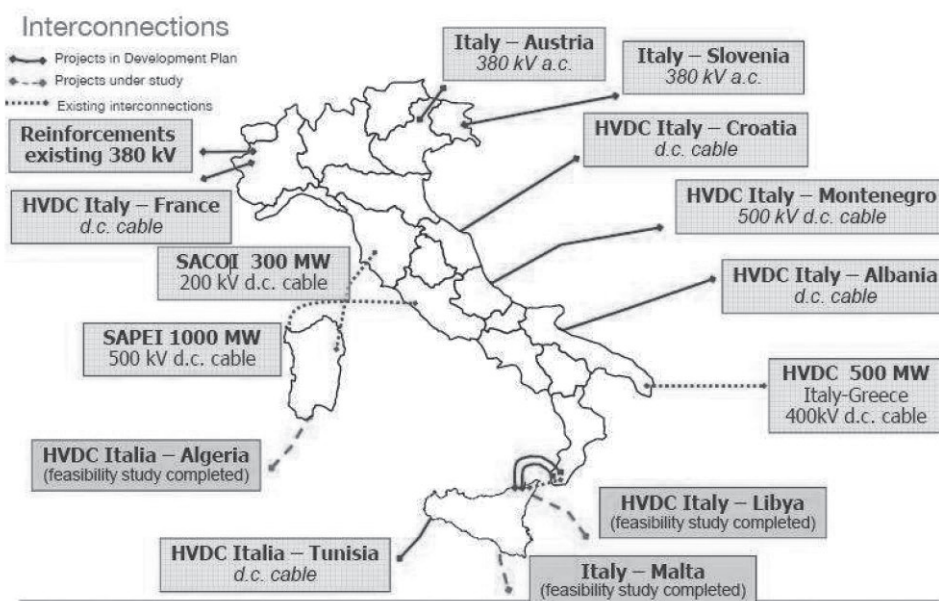


Figure 3: Italian Market (MEDREG, 2010)

incumbent EDP Group with the power stations were terminated. This led to establishing a reparation mechanism for the stranded costs due to loss of the contracts, with only two PPAs with two power plants remaining in effect. The operation of these power plants and the management of the power generated on the market are handled by 'REN Trading.' REN Trading was created as a subsidiary of the parent company (REN SGPS) that owns the transmission grid operator. Shortly after the termination of the PPAs, the standard regime electricity generators began making their sales offers in a market context (World Energy Council, 2010).

4.1.2 The Italian Market

Italy has a national wholesale market with several price areas, and a considerable number of interconnections throughout the national territory (Figure 3). Wholesale trading takes place on the day-ahead power exchange (IPEX), while the volume of the OTC market is very small (World Energy Council, 2010).

The Italian market has higher wholesale prices compared with other markets in Europe. Average zonal sale prices in 2007 ranged from 68.47 €/MWh in Northern Italy to 79.51 €/MWh in Sicily. The Italian market has a relatively small number of market players, and the largest generator enjoys a market share of about 47%. The market share of Enel decreased through the forced separation of parts of the generation park as mandated by the Italian energy law. OTC trading started only recently in the Italian market, and deals are still limited. Reasons for this situation include high variable costs of the current generation park, delay in building new generation capacity to meet increasing demand and heavy congestion on the interconnection line. Figure 4 shows the market shares currently present in the Italian Market (World Energy Council, 2010).

4.2 South Mediterranean

Primary regional interconnection schemes among South Mediterranean countries form a considerable foundation for the targeted RMEM. These interconnections are divided

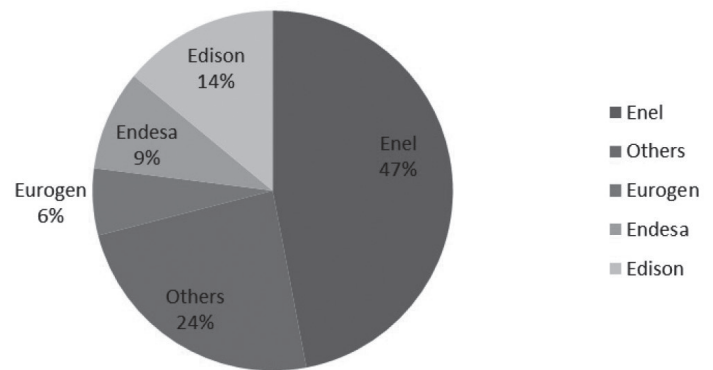


Figure 4: Market shares in the Italian market (World Energy Council, 2010)

into two main blocks: the Arab Maghreb block and the Arab Mashreq (EIJLLPST countries, i.e., Egypt, Iraq, Jordan, Libya, Lebanon, Palestine, Syria and Turkey) block. Similarly to the North Mediterranean region, countries that are part of these blocks are also engaged with other power pools in Africa and Asia, such as the Gulf Cooperation Council block and the East Africa Power Pool. Figure 5 shows the existing and planned interconnections within this block (MEDREG, 2012b).

4.2.1 The Maghreb Block

The Maghreb regional interconnection includes Morocco, Algeria and Tunisia. This interconnection was initiated in the 1950s and evolved into multiple high-voltage transmission interconnections between the three countries. In addition Morocco was connected to Spain in the late 1990s. As a result, Morocco, Algeria and Tunisia are now all synchronised with the pan-European high-voltage transmission network. Figure 6 shows the Maghreb Block (MEDREG, 2010).

4.2.2 The Mashreq Block

As part of an effort to upgrade their electricity systems to a regional standard, Egypt, Iraq, Jordan, Syria and Turkey initiated the eight-countries (EIJLLPST) regional interconnection in 1988. Lebanon, Libya and Palestine later joined the interconnection system, enlarging the agreement to eight countries. Turkey is expected to synchronise fully to the European grid soon, which will lead to further efforts to synchronise the EIJLLPST electricity network with the grids in Turkey and Europe (MEDREG, 2012b).

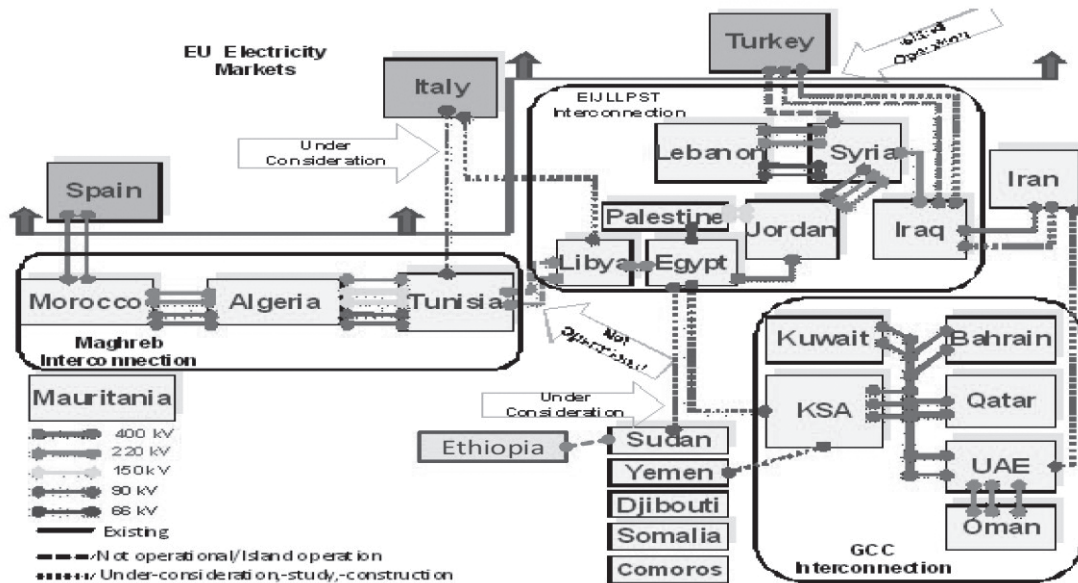


Figure 5: South Mediterranean Blocks (MEDREG, 2012b)

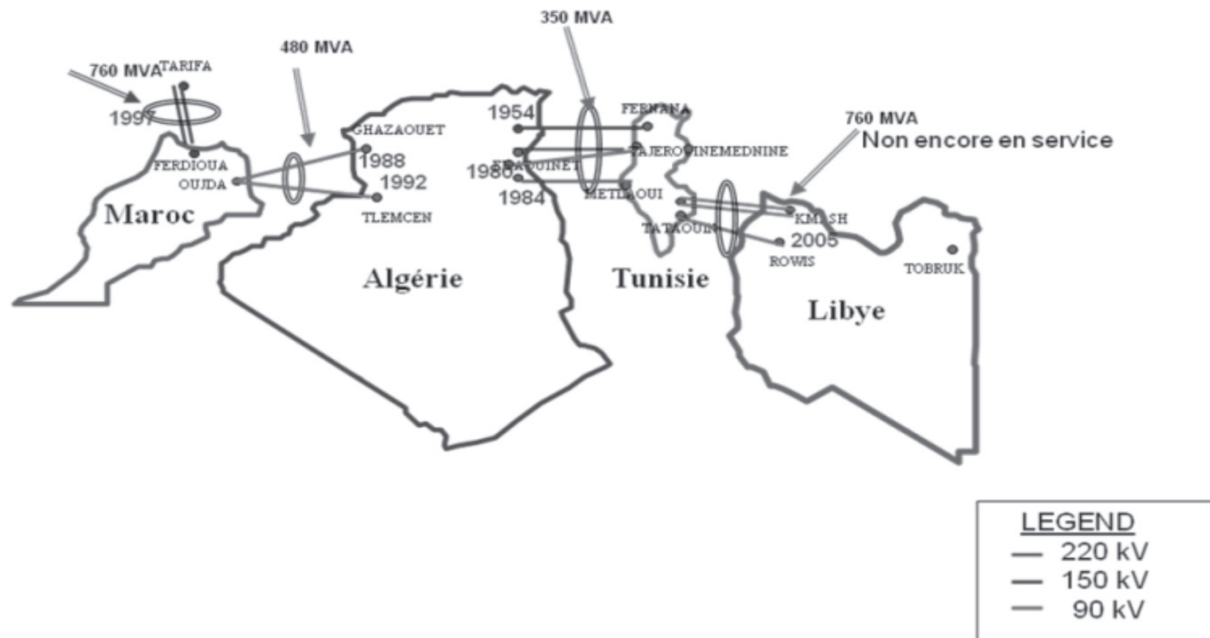


Figure 6: Maghreb Block (MEDREG, 2010)

The EIJLLPST interconnection resulted in significant benefits. For example, in 2007 it enabled Jordan to avoid considerable load shedding. In addition, Jordan, Egypt and Syria share spinning reserves. By minimising spinning reserve requirements in this manner, generation is operated closer to its optimum output level, thus improving efficiency and reducing fuel and maintenance costs. Opportunities for short-term trades have also been realised through the diversity of demand. Syria has a winter peak, while Egypt and Jordan

have summer peaks. Syria can make sales to Egypt and Jordan during summer when it has surplus generating capacity, while Jordan and Egypt can make sales to Syria in winter when they have surplus generating capacity. These sales are particularly relevant in a situation where there are different generation technologies in the various countries. Figure 7 shows the energy flux within the Mashreq Block (MEDREG, 2012b).

Though the Maghreb and EIJLLPST intercon-



Figure 7: Arab Mashreq Block (MEDREG, 2010)

nections have existed for some time, electricity trade among these sub-regions countries has remained at modest levels due to various obstacles. First, these countries experience limited generation reserve margins, the absence of a harmonised regulatory framework with clear rules governing electricity trade, the confined access to national transmission networks and a trade system that is generally limited to a single government-owned entity in each country. Second, the interconnected systems are often not synchronised, meaning that part of a national grid system may have to be isolated from the main grid to accept imports from another country. Finally, the lack of surplus generating capacity and generation fuel in the interconnected countries means they often do not have spare energy to trade. These three issues are all coupled with institutional weaknesses at both the national and regional level, that is, governing bodies lack the tools, data and incentives necessary to promote trade (MEDREG, 2012b).

As the realization of the existence of these limitations broke forth, the Maghreb countries agreed to pursue actions aimed at harmonising laws, regulatory frameworks, economic and technical conditions for the creation of a viable market for electricity in and between the three Maghreb countries and

integration with the EU. Further, they accepted to work towards creating a genuine Maghreb electricity market, with network access provided on a nondiscriminatory and transparent basis and properly priced to promote trade. They also invited the network operators to draft a common set of rules to facilitate cross-border trade in electricity, and the regulators (or public authorities which are currently assuming this position) to present a draft on common methodology for pricing and cross-border access to transmission infrastructure for electricity, with reference to the principles used in the EU. They agreed to work together towards the improvement and harmonisation of market rules for electricity, access to the network and operating systems. Both the document presented by network operators and the regulators emphasise the importance of developing new and renewable energy, and promoting energy efficiency and environmental conservation in the integration of electricity markets through the use of a sustainable development approach (MEDREG, 2012b).

4.3 Challenges to the Establishment of RMEM in the Mediterranean Region

Despite the potential outlined above, there are always challenges that face the establishment of RMEM in the Mediterranean region. Various challenges slow down the overall integration

progress and reduce the benefits of common work. These challenges are related to conflict in the plans to align national and regional investment decisions; absence of harmonised regulatory environments between countries; limited scope of regional institutions and financing; and concerns about national sovereignty and energy interdependence. In the next section, we develop the analysis of the challenges currently preventing the full establishment of RMEM (MEDREG, 2012b).

4.3.1 Physical Challenges

First, physical challenges concern interconnecting transmission lines, which often involve the need for an upgrade of the existing lines and plans to connect unsynchronised systems. Second, physical challenges mean the lack of designed minimum standards, which impact the system reliability and security risks associated with expanding interconnection capacity.

4.3.2 Structural and Institutional Challenges

Commitment: Limited existence of overarching documents that commit countries to pursue power market reform, increased regional integration and trade.

Market Structure: Most of the electricity markets are vertically integrated, state-owned monopolies. There are no 'eligible customers', i.e. customers with the opportunity to choose their supplier. As a result, international transactions take a long time to be negotiated and are cumbersome, as they cannot respond to short-term opportunities (such as sudden changes in generation availability). They are also not transparent and often conducted by individuals who do not have a direct stake in the outcome, e.g., government officials conduct negotiations, while industrial customers are the actors whose profitability is really impacted by the outcome. Markets that are not liquid (i.e., having a limited number of transactions), are not transparent and have the majority of trades conducted by government officials, tend to exacerbate further the problem of market liquidity. Potential market participants are not trusting that the proposed market price is truly 'fair' and formed by market forces. As a result, these potential market participants refuse to participate.

Regional organisations: While there are some regional integration organisations in place, their number and coverage is limited, and they have not enough responsibilities and power to enforce their decisions. Regional committees could significantly increase trade among member countries. Committees formed by participants from all countries involved in the regional trade could cover areas such as regulation, technical rules, operating and planning standards (grid code, tariffs, expansion planning, trade, settlement, dispute resolution). ENTSO-E, the European network of transmission system operators for electricity, provides an excellent example of an organisation that is more accepting of and committed to these important issues.

Privatisation: Private participation in electricity markets is generally limited to Independent Power Producers (IPPs). While privatisation is not necessarily a requirement, it can be a significant contributor to successful regional integration. The private sector can help to mobilise the huge amounts of capital necessary to fund projects that are needed to meet increasing electricity demand. Further, private sector management expertise can significantly improve the operational efficiency of electricity markets.

Losses: Some countries have high technical and commercial losses and poor collection rates, adding to the financial woes and creditworthiness of the power companies.

4.3.3 Regulatory Challenges

Harmonised Legislations: The first aspect to be considered in this sense should be the legislative convergence of Mediterranean countries with respect to energy, environment and safety.

Independent Regulators: Most Mediterranean regulatory agencies are not as independent and informed as they should be. This diminishes their ability to make decisions in the absence of political interference. Also, the staff of regulatory agencies often lacks the appropriate background, expertise and skills, which hinders the development of decisions on behalf of all participants in the power sector. In a nutshell, regulation should be the key job of the staff of regulatory agencies.

Subsidies: The power sector displays a significant subsidisation and cross-subsidisation of pricing. Retail tariffs are generally well below the cost of supply and there is often cross-subsidisation of tariffs by larger industrial customers on behalf of smaller households. Since many power companies are at or near bankruptcy, it is difficult to find a creditworthy off-taker. As potential customers are paying prices for power that are well below cost, it is also difficult to find buyers: a potential customer is unlikely to buy power at international prices when he can purchase power in the domestic market at subsidised prices.

Transparency: Most countries do not allow access to their transmission networks under published terms, conditions, and prices, which means access cannot be considered fair and nondiscriminatory. Also, there is very little published information concerning market prices and transmission availability.

5. A Strategic Roadmap for the Establishment of RMEM

The increasing number of countries joining the Mediterranean regional integration process implies that countries tend towards a greater interdependence. To reduce the risks that this course of action implies, it is necessary to develop a Mediterranean market with regional coordination and governance to optimise generation and transmission planning and operations for the broader region. The governance structure should be conducive to international trade, and participating countries must have the political will to relinquish a portion of their energy supply responsibilities to the greater good of the region (MEDREG, 2012b).

5.1 Mission and Vision

The primary goal of RMEM is to integrate the sub-regions to form a regional electricity market based on a harmonised regional market structure. This objective should be followed by a capacity building initiative for all the different entities involved. Then, a gap analysis study should be carried on figuring out the weak points and making proposals to solve them. Finally, the strategic roadmap document should be circulated among the relevant

parties, and a final version based on their feedback should then be developed (MEDREG, 2012b).

The roadmap towards establishing RMEM could be completed through multiple stages, corresponding to the national and regional circumstances that drive the process. We analyse them in the following section. It has to be mentioned that the transitions between proposed stages should be triggered by events rather than by specific dates. However, target dates will be a useful mechanism for tracking progress.

Four basic stages form the roadmap. The preliminary stage involves the design and development of the market trading rules and institutions. The first stage implements and designs the essential elements of the market to accommodate existing agreements. The second stage introduces a spot market and a fully auction-based balancing market to improve the efficiency of the allocation of transmission assets. The third stage introduces sophisticated hedging instruments and derivatives to promote liquidity. At this last stage, traditional power purchase agreements (PPAs) no longer exist.

5.2 Roadmap to RMEM Stages

In this section we analyse the fundamental features and key achievements of each stage. The first, second and third stages have been organised in tables that highlight the main actions and objectives which are required to achieve a Regional Electricity Market (MEDREG, 2012b).

5.2.1 Preliminary Stage

The key achievements of this stage are:

- Establishment of three regional bodies: Regional Regulatory Agency (RRA), Regional Market Operator (RMO) and Regional System Operator (RSO).
- Implementing official documents on regional market; this includes regional market rules, commercial agreements, grid code and regional databases, making the necessary adjustments on the national and regi-

onal levels in order to manage cross-border trading activities.

We now describe in greater detail the regional bodies that should be established in the Mediterranean basin to regulate the electricity sector.

The RRA shall have representatives from all of participating countries, and the power to apply sanctions to enforce its decisions or to penalise parties that breach any approved regional regulation. This could be achieved through key features, which are independency, transparency and fairness, predictability and efficiency in decision-making. The Regional Regulator’s responsibilities would be:

- Endorsing and ensuring compliance with the regional-market governance documentation (market rules and grid code);
- Monitoring the performance of the market and guaranteeing that it operates in a non-discriminatory way;
- Advising on generation-reserve criteria;
- Advising on rules governing allocation of cross-border transmission capacity to eliminate contingencies;
- Promoting common standards in the member countries concerning safety, security, reliability and quality of service in the generation and supply of electricity to consumers;
- Reviewing proposals for expansion of international and regional interconnections;
- Taking care of dispute resolution between members;
- Participating in regional planning;
- Deciding and implementing the transition between the stages described in this paper.

The RMO shall be responsible for several activities. First, the RMO should monitor the system operation coordination through scheduling pool interconnectors, checking load flows, taking action on variances and balancing market counterparties for imbalance settlement. Second, the RMO should be involved in market administration through market monitoring and surveillance, administration of contracts and dispute management. Third, the RMO should manage managing the balancing and the day-ahead markets. Finally, the RMO should settle the meter-reading administration, balancing market billing, day-ahead market settlement and payments.

The RSO shall be responsible for providing oversight on technical aspects of the RMEM, ensuring fair and nondiscriminatory access to grid and international interconnections, and finally coordinating the efforts of national Transmission System Operators (TSOs) to dispatch electricity through international interconnectors.

5.2.2 *First Stage*

Actions	Key Achievements
I. Participation in bilateral trading	A. Ensuring that market rules and commercial agreements are properly working together
II. Commercial agreements still exist	B. Regulating the operation and pricing system of power transactions
III. Participation in the balancing mechanism through offers of electricity from the National System Operator at regulated prices to reduce risk in early stages of the market	C. Improving the functions and responsibilities of the Regional Regulator which are required for next stages
IV. Transmission access is allocated with contracts	D. Creating capacity building both for market participants and institutions to be ready for the coming market stages
V. Transmission losses are paid by the seller	E. Establishing a regional database system to ensure regular, updated and easy-to-access data
VI. Ancillary services (spinning reserve, fast start, cold start and black start) are regulated	F. Reporting market monitoring and surveillance indicators to evaluate the progress of the market

5.2.3 Second Stage

Actions	Key Achievements
I. Participation in bilateral trading (<i>continued</i>)	A. Improving distribution networks to ensure a smooth trading
II. Participation in the balancing mechanism (<i>continued</i>)	B. Enhancing confidence in regional market by monitoring the market functionality and proposing changes when needed
III. No new PPAs affecting interconnectors are established; legacy PPAs keep working	C. Continuing with regular capacity building in financial trading mechanisms and regional trading rules
IV. Day-ahead market start to replace the short-term bilateral market, providing liquidity for short-term deals together with transparent price information	D. Promoting the role of the Regional Market Operator
V. Balancing mechanism moves to competitive bids and offers from National System Operators; regulators monitor the balancing market to avoid abuse of market power	E. Enhancing the usage of metering and communication infrastructure
VI. Transmission losses (<i>continued</i>)	F. Enhancing the usage of the regional database system
VII. Transmission pricing through auction mechanisms introduced for medium-term bilateral trade agreements (BTAs) to create market signals for investment	
VIII. Ancillary Services (<i>continued</i>)	

5.2.4 Third Stage

In this stage, the section on key achievements is removed, as we assume to have reached the optimal market condition.

- I. Participation in bilateral trading (*continued*)
- II. Traditional PPAs are phased out
- III. Spot market (*continued*)
- IV. Forward and futures markets become fully functioning to improve risk management and allow further liquidity into the market
- V. The balancing mechanism becomes fully functional and it is based on bids and offers from participants and with two part pricing
- VI. Transmission Access *continues* and rights are now auctioned, except for those reserved to legacy long-term BTAs
- VII. Transmission losses *continue* and increased meshing of the network requires

more accurate estimations of losses through load flow calculations

- VIII. Transmission *continues* and pricing methodology for wheeling contracts should have become more accurately reflective of cost

6. Conclusion

It is quite obvious that Europe is in the process of transitioning from national markets to an integrated regional market. This market does not yet exist; however, considerable commercial exchanges of electricity are already taking place between different markets.⁴ Many of the major markets in the North Mediterranean now have a national or regional power exchange. Similarly, the South Mediterranean countries are now heading towards the creation of a regional market within the Southern area as a first step, then with the Northern area afterwards. The existing link between the Maghreb block and North Mediterranean one, basically represented in the interconnection between Morocco and Spain, could be a solid start in this context.

Our proposed roadmap is an indicative plan for Mediterranean countries to contribute in establishing a harmonised Regional Mediterranean Electricity Market. It is recommended that all countries should clearly identify their current status as well as their approved plans in light of this roadmap. Also, they should propose a timeframe for joining the targeted market. The opportunities for trade will stay

⁴ Communications and reports of the European Commission discussing this aspect are the following. Europa. (2004). *Strategy paper: Medium Term Vision for the Internal Electricity Market*. [Online] Available from: http://ec.europa.eu/energy/electricity/florence/doc/florence_10/strategy_paper/strategy_paper_march_2004.pdf [10/09/2012]; Europa. (2011). *2009-2010 Report on Progress in Creating the Internal Gas and Electricity Market*. [Online] Available from: http://ec.europa.eu/energy/gas_electricity/legislation/doc/20100609_internal_market_report_2009_2010.pdf [10/09/2012]; Europa. (2011b). *European Energy market: Time to Switch to Higher Gear*. [Online] Available from: http://ec.europa.eu/energy/gas_electricity/legislation/doc/20110224_non_paper_internal_nergy_market.pdf [10/09/2012]; Europa (2012). *Making the Internal Energy Market Work* [Online] Available from: http://ec.europa.eu/energy/gas_electricity/doc/20121115_iem_0663_en.pdf [10/09/2012];

limited until generation, and interconnection, is considerably enhanced by the projects that are under development or under consideration. Moreover, there is a need to establish a Regional Regulatory Agency as well as a Regional System Operator to complete and coordinate the regulatory institutional system in the Mediterranean area and provide a stable framework of rules for the harmonization and balancing of the regional electricity market.

References

- Bhattacharyya, S. C. (2011). *Energy Economics: Concepts, Issues, Markets and Governance*. London, Springer Verlag.
- ENPI. (2012). *MED-EMIP - Energy Cooperation*. [Online] Available from: http://www.enpi-info.eu/mainmed.php?id=26&id_type=10 [10/09/2012]
- Europa. (2010). *Cross-Border Exchanges in Electricity (from 2011)*. [Online] Available from: http://europa.eu/legislation_summaries/energy/internal_energy_market/en0014_en.htm [10/09/2012]
- Europa. (2008). *Prospects for the Internal Gas and Electricity Market*. [Online] Available from: http://europa.eu/legislation_summaries/energy/internal_energy_market/l27075_en.htm [10/09/2012]
- Europa. (2004). *Medium Term Vision for the Internal Electricity Market*. [Online] Available from: http://ec.europa.eu/energy/electricity/florence/doc/florence_10/strategy_paper/strategy_paper_march_2004.pdf [10/09/2012]
- Keating, M. F. (2012). Re-thinking EU energy security: The utility of global best practices for successful transnational energy governance. In C. Kuzemko, A. V. Belyi, A. Goldthau, & M. F. Keating (Eds.) *Dynamics of energy governance in Europe and Russia*. Basingstoke, Palgrave Macmillan, pp. 86-108.
- MED-EMIP. (2010). *Overview of the Power Systems of the Mediterranean Basin*. [Online] Available from: http://ec.europa.eu/energy/international/studies/doc/2010_04_medring_vol1.pdf [10/09/2012]
- MEDREG. (2010). *Heading to an Integrated Mediterranean Electricity Market*. [Online] Available from: http://www.medreg-regulators.org/portal/page/portal/MEDREG_HOME/PUBLICATIONS/Electricity [10/09/2012]
- MEDREG. (2012a). *A Master Plan for the Establishment of a Regional Electricity Market*. [Online] Available from: http://www.medreg-regulators.org/portal/page/portal/MEDREG_HOME/PUBLICATIONS/Electricity [10/09/2012]
- MEDREG. (2012b). *Case Study on the Application of Article 9 on Flexibility Mechanisms in the EU Directive 2009/28/CE*. [Online] Available from: http://www.medreg-regulators.org/portal/page/portal/MEDREG_HOME/PUBLICATIONS/RES%20AG_Case%20Study%20on%20Art.9_June2012.pdf [10/09/2012]
- Munoz, M., Oschmann, V., & Tabara, J. D. 2007. Harmonization of renewable electricity feed-in laws in the European Union. *Energy Policy*, 35(5), 3104-3114.
- Munro, A. (2009). *Bounded Rationality and Public Policy: A Perspective from Behavioural Economics*. London: Springer.
- Perez, P. S., Van Hertem, D., Driesen, J., & Belmans, R. (2006). Wind power in the European Union: grid connection and regulatory issues. *Proceedings of Power Systems Conference and Exposition*, pp. 776-783.
- Pineau, P., Hira, A., & Froschauer, K. (2004). Measuring international electricity integration: a comparative study of the power systems under the Nordic Council, MERCOSUR, and NAFTA. *Energy Policy*, 32, 1457-1475.
- Roggenkamp, M. M., & Boisseleau, F. (2005). *The Regulation of Power Exchanges in Europe*. Morsel, Intersentia nv.
- Snowdon, B., & Vane, H. R. 2005. *Modern Macroeconomics: Its Origins, Development and Current State*. London, Edward Elgar.
- Van der Veen, R. A., Doorman, G. L., Grande, O. S., Abbasy, A., Hakvoort, R. A., Nobel, F. A., et al. (2010). *Harmonization and Integration of National Balancing Markets in Europe - Regulatory Challenges*. [Online] Available from: <http://www.Nextgenerationinfrastructures.eu/download.php?field=document&itemID=548236> [10/09/2012]
- Varian, H. (2006). *Intermediate Microeconomics* (7th ed.). London, W.W. Norton.
- World Energy Council. (2010). *Roadmap towards a Competitive European Energy Market*. [Online] Available from: <http://www.worldenergy.org/documents/roadmap2.pdf> [10/09/2012]

EU Energy Law, Volume V

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edited by **Jean-Michel Glachant,**
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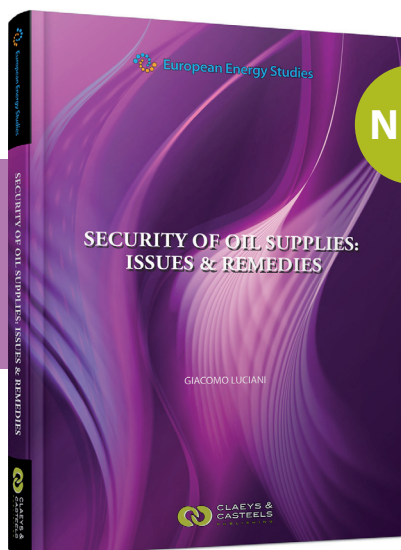
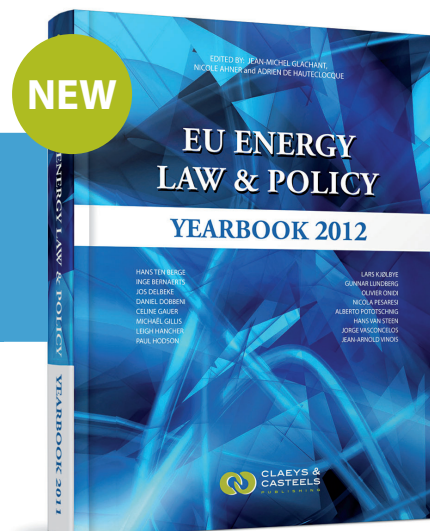
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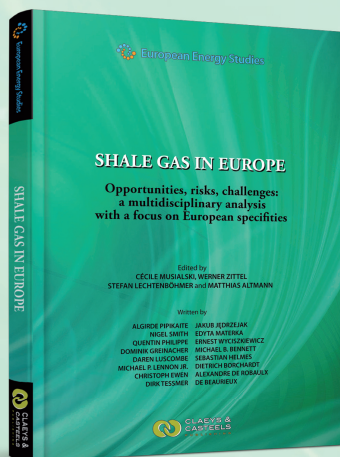
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