

Roadmap towards a Competitive European Energy Market

Executive Summary
World Energy Council 2010

Promoting sustainable energy for the
greatest benefit of all



Roadmap towards a Competitive European Energy Market

Roadmap towards a Competitive European Energy Market
World Energy Council 2010

Copyright © 2010 World Energy Council

All rights reserved. All or part of this publication may be used or reproduced as long as the following citation is included on each copy or transmission: 'Used by permission of the World Energy Council, London, www.worldenergy.org'

Published 2010 by:

World Energy Council
Regency House 1-4 Warwick Street
London W1B 5LT United Kingdom

ISBN: 0 946121 38 9

Disclaimer:

This report reflects the views of WEC European Members and does not necessarily represent the view of all WEC members.

This report describes the current situation of European electricity markets. It clearly shows that the various European markets are still in different stages of development and in opening themselves up to fair market competition. The process of integration must be accelerated.

With the financial crisis evolving into a severe, global economic recession, there have been growing doubts over whether energy markets can continue to operate efficiently under present conditions or whether the shift to non-market mechanisms would be a better choice. This question remains an ongoing source of debate in the recently liberalised electricity sector.

Textbook wisdom says that the market is the most efficient place to allocate financial means for investments. Therefore, during a period of a crisis, it should follow that we actually need more market mechanisms, not fewer, if we want to stimulate investments in an economically efficient way. Regulated electricity prices and nationalistic thinking will not help to solve Europe's electricity challenges with regards to either the generation or the transportation of electricity.

For the electricity market, the central danger of the current recession is that countries will revert to national thinking and protectionism to the detriment of Europe as a whole. Increased protectionism will almost certainly stop further investments into the European grid infrastructure, and it will slow the integration between different national markets that Europe so desperately needs. Grid improvements are the core challenge for the European electricity sector, and the successful completion of these improvements is necessary if regional markets are going to take the next steps towards a truly common European market.

This report describes the current situation of European electricity markets. It clearly shows that the various European markets are still in different

stages of development and in opening themselves up to fair market competition. The process of integration must be accelerated. Failure to speed up this process will result in lost momentum and then inertia. One possible solution to this challenge would be to define a core-European region as a model region for competitive markets. To this end, policymakers and European market players should better co-ordinate their efforts to attract the necessary investments and to implement updated regulations and smart market solutions.

This report focuses primarily on the electricity market. Though the EU-directive for liberalisation of European electricity and gas markets (February 1996) and subsequent provisions have addressed electricity and gas under the same heading, the authors of this report maintain that these markets are actually quite different in nature and deserve to be studied independently. Carrying out another report focused specifically on the gas market would be desirable and would have a complementary value to this study.

Renewable energies are playing an increasing role in power generation, and they are a valuable contribution to Europe's energy security and Europe's sustainable energy development. The recent EU-Energy Climate Package has fixed ambitious targets to integrate renewable energy sources into Europe's energy mix, and those targets are being encouraged by a number of policy incentives. However, many economic and operational problems still exist.

If a European or global carbon market does become established, it should be obvious that electricity prices will be better set by a market model where supply and demand set the price than by a regulated system.

Renewables are not yet competitive, and the existing and expanded transmission grids still need to adapt to and ease the access heavily geographic concentration of RES without causing operational failures to the system. The study broadly considers all of these issues and recommends some market-based solutions to solve them.

What can be learned from liberalisation processes around the world? The **first** lesson is that liberalisation will not necessarily lower electricity prices as initially announced. If liberalisation is started when there is surplus of capacity, prices will fall. This has been demonstrated in many parts of Europe. However, when there is no surplus, market prices will have to adjust so that supply meets demand. Otherwise, someone will have to pay for this additional consumption and supply. In some countries, taxpayers indirectly shoulder this burden. Thus, the conclusion is that liberalisation will result in more efficient but not necessarily lower prices.

The **second** lesson is that liberalisation leads to efficient investments. In a market with regulated prices, investors speculate in including the investment cost in the regulated cost base so that prices will increase but not reach the full cost of the new capacity. Although the new generation capacity alone will not be profitable, the entire generation portfolio can be. This price below where supply meets demand will stimulate a higher use of electricity compared to the cost of new generation capacity.

In a liberalised market, the generators have to match new investments to the point in time where the price is equal to or higher than the cost of the

generation to be built. This is, of course, a very challenging exercise, which will become even more difficult if the European Trading System (ETS) or another carbon market sets an accepted price for CO₂. If a European or global carbon market does become established, it should be obvious that electricity prices will be better set by a market model where supply and demand set the price than by a regulated system.

The **third** lesson is that when liberalisation is finished, the scope of political interventions in the electricity supply business diminishes. This alone probably contributes quite considerably to the overall efficiency of the electricity market. From a politician's point of view, it can be frustrating to not have authority beyond setting the rules of the market. On the other hand, it should be quite convenient for politicians to not be obligated to act when there are problems, as was the case in the old days.

Mostly because of the sensitive pricing issues described above, liberalisation is a vulnerable process. During the transition from monopolies to competitive markets, many countries have implemented various forms of price regulation. In some cases, governments and regulators cite lack of competition or to the desire to simply avoid rapid price increases for customers. However, in the long run competition is likely to help reduce prices and improve quality.

In short, there are three potential outcomes that could result from the liberalisation of European electricity markets.

- ▶ 1) The continued integration of regional markets, ultimately resulting in a European-wide market.
- ▶ 2) Certain regions—most likely the northern and north western regions—will develop their own functional markets. The other regions of Europe will develop more slowly, and there will be repeated infringement procedures from the European Commission against these countries.
- ▶ 3) The liberalisation efforts in Europe will collapse. National monopolies or more regulated markets will be reintroduced.

The goal of the liberalised market is to achieve competitive price position. However, this economic goal is not necessarily shared by society as a whole, and society may have other, conflicting priorities. It often seems that consumers want it all: the lowest possible energy price, low price variation, security of energy supply, high environmental standards, energy infrastructures that do not alter or damage the landscape, and independence from foreign suppliers.

Today, we have with a European-wide carbon market. Besides we have many variations of national laws and regulations. It will be difficult in the long run to combine a European electricity

market and a global carbon market with national support systems for RES-E. Currently, we have a conflict of systems with regulated RES energy and un-regulated parts of the generation market. It is very demanding to optimise this, as Europe is in between national markets and a European market. In the words of Michael Porter, Europe is “stuck in the middle.” It suffers from the disadvantages of both extremes, and it cannot take the necessary steps to achieve the ideal system.

Overall, what Europe wants and what is feasible is not entirely compatible. The multidimensional optimisation process is very demanding. For this reason, we are confronted with patchwork markets that fall short of the optimal outcome. It is not only essential to achieve the best overall solution; people must also understand and trust this solution. Today, we are far away from our key objectives. It is up to politicians and the electricity sector at large to improve consumer confidence in the system.

In the current European system, the main obstacle is a predominantly national view among regulators and grid operators that is difficult to bring in line with a European or even regional market. Because of this, needed investments in grid infrastructure are delayed or do not take place. Consequently, investments in power plants are also made with caution. If a harmonised framework existed, investments in the grid infrastructure in one area would be done following the same rules as in the neighbouring area. As a result, bottlenecks would be reduced, and there would be more security for investments in generation assets. With substantial new investments, the power plant fleet in Europe

could be dramatically improved. Competition would ensure that the older, inefficient, and high-cost plants would vanish.

Unfortunately, today's politicians and regulators see the private household as the key to increasing competition. Private customers do stand to benefit from liberalisation, but they will benefit from this liberalisation much more if there is also a substantial increase of competition within the European generation sector.

Europe is in the process of transitioning from national markets to a European market. The descriptions of the national resp. regional markets show that a pan-European market does not yet exist. However, considerable commercial exchanges of electricity are already taking place between different markets. One indication of the success of ongoing regional and European integration is the convergence of wholesale electricity prices between adjacent areas. All major markets in Europe now have a national or regional power exchange. This reflects the increasing role of a centralised market-place.

It is impossible to envision the future of the European electricity without integrating renewable energy into the liberalised market structure. Renewables will certainly be an important part of the future generation mix in Europe, and the EU goals for renewable energy production will lead to renewables having a substantial market share by 2020 (estimates are 34%). These increases will have a notable impact on the wholesale electricity market.

One of the prerequisites for market integration is technical integration. The difference between supply and demand of electricity can only be resolved via transport. Therefore, meeting energy demand is primarily a cross-border grid issue. Maintaining a strictly national view with regards to renewable energy is simply not realistic in this day and age. Renewables, especially wind energy, need a European-wide grid for multiple reasons, including:

- ▶ Reducing the impact of inconsistent renewable production;
- ▶ Easier access to balancing energy in the larger international market;
- ▶ Enhancing Europe's security of supply.

Renewable energy's volatile production should lead to smaller price effects when balanced against a larger market area. Unfortunately, European grids still reflect the national electricity systems, and major investments are needed to develop into a truly pan-European grid. As a European grid develops, international coordination of regulatory bodies must also be improved and harmonised. This will not only benefit renewable promotion schemes but also grid access, balancing energy, liquid intra-day markets, and so on.

Research, Development and Deployment of Renewable Energy is and will continue to be necessary, but policymakers must also keep in mind that different technologies require different treatment.

It is imperative that the European Union develops a roadmap outlining how the various national renewable promotion schemes will be harmonised and how they will be integrated into the existing regional electricity markets.

Some technologies like on-shore wind can produce electricity roughly in line with market prices. These technologies will become competitive without major government intervention. For these technologies, a certificate market is a reasonable tool to help finance projects and to give incentives for investments. Other technologies, like photo-voltaic, are still in the early stages of development. In these instances, it might be preferable for states and the private sector to first fund additional research and to hold back on deployment for the time being. In this way, the EU will avoid a large-scale roll-out of a non-mature technology.

It is imperative that the European Union develops a roadmap outlining how the various national renewable promotion schemes will be harmonised and how they will be integrated into the existing regional electricity markets. As certain RES technologies become competitive, a market-based programme like the certificate scheme would likely incur the lowest macroeconomic costs.

The roadmap for the integration would consist of

- ▶ Identifying the renewable technologies that are most advanced and closest to competitiveness;
- ▶ Integrating these technologies into an European-wide incentive system;
- ▶ Harmonising regulation, grid access, balancing energy, etc.

This approach would also improve the competitiveness of the electricity market as a whole.

Recommendation 1

Start integration with a core-European market (CORE MARKET)

Looking at the current situation in the European electricity market, we propose starting with integration of regional markets, which might gradually merge and evolve towards a fully-integrated European market. One of the most likely outcomes is the creation of a core-European electricity market. Because of the numerous prerequisites for a country to take part in such an international electricity market, some countries are better poised to start the core-European market than others, specifically the regions defined by the ERGEG initiatives as Nordic and Central Western. A market region defined by the integration of the Nordic market with the Central Western European market is certainly a reasonable possibility. As this market develops, it will become attractive to other regions, and these other regions will gradually be integrated with the more developed regions.

Although the recession might delay the development of this integration, it is crucial to at least start the integration as soon as possible. Of course, the core-European market design should be flexible enough to integrate other countries and regions.

The core market would consist of an extended geographical space with a well-balanced electricity mix and a large, liquid wholesale market. The benefits of this market region are numerous. First,

the market access to a larger portfolio of power stations should enhance the efficiency of the wholesale market. Having increased competition in the market should benefit consumers. If national and international transmissions are at a sufficient level, there are also macroeconomic benefits, since a larger portfolio of consumers in the grid means fewer investments are needed for balancing power. Moreover, hydro generation in this newly established region will help balance intermittent wind power (assuming a strong improvement of the grid capacity). Improved grid capacity is needed for the transport of electricity, balancing energy, and to transport wind energy from production centres to demand centres. Indeed, this improved capacity will not only reduce balancing costs, it will also facilitate the further development of renewables. If the region has a harmonised, market-oriented promotion scheme, the core-European market will also demonstrate the macro-economic benefits of liberalised markets by finding the most efficient solutions.

If one assumes that the core-European market consists of Austria, Belgium, Denmark, Finland, France, Germany, Luxemburg, the Netherlands, Norway, and Sweden, then total electricity production would be slightly more than 1,700 TWh (according to production data for 2005, source: EURELECTRIC). This market would represent more than 50% of the EU-29's production (the EU-29 refers to the EU-27 plus Norway and Switzerland). The neighbouring regions and countries including the Czech Republic, Poland, Italy, Switzerland, and Iberia can decide whether they will take part in this market, and if so, when. The large scope of the core-European market

should make it attractive enough to motivate other countries to participate. Adding the latter six countries and regions would result in a market amounting to almost 80% of the EU-29's production.

Recommendation 2

The core-European market has to establish a set of common rules valid for the region, according to the 3rd package provisions and the guidelines/market codes following the 3rd package approval, **and it must identify the requirements for the other regions and countries to join the core market.**

In order to make this core-European market work, a basic set of common rules has to be defined. These basic rules will deal with regulatory issues, TSO issues, and market design. They should be strict enough to standardise the market but also flexible enough to eventually allow non-member countries to participate in the market. Countries that want to access the market after the core-European market has already been established will benefit from a well-defined core market and from clear prerequisites for participation. With these processes and requirements clearly defined, countries can develop clear national roadmaps for joining the core-European market. In the current situation, no clear target structure is identified, and as a result, it is sometimes difficult for countries to know in which direction to develop.

In this process all stakeholders (power industry, TSO, EU and national bodies, regulators, consumers, etc.) have to be involved and to give as much practical input as possible. Such widespread

collaboration will minimise frictions during the implementation phase.

A clear and understandable description of the targets and the steps to achieve these targets are indispensable. This is crucial for communication.

Recommendation 3

Grid development is important for improving competition in Europe and for technically integrating renewables into the market system (GRID AS AN ENABLER ALSO FOR RENEWABLES)

Grid enhancement is essential to improving competition in the European electricity market. By 2010, ENTSO will propose a plan for the grid development over the next decade. To be meaningful, the ENTSO plan should describe its underlying assumptions about energy flows in Europe, take the increasing production amount of renewable energy into account, deduce the expected bottlenecks, and derive an investment plan. Grid investments will also be of utmost importance in meeting the EU's 2020 RES-E target. For conventional electricity production, grid investments will be a fundamental in making decisions about power plant investments that take the price expectations in the new region into account.

The acceptance of the new transmission lines is critical to improving the grid. The TSOs need more political support to overcome local resistance against transmission lines and to communicate the benefits of the new lines to the public.

Recommendation 4

The European electricity industry has to have a seat at the table (STAKEHOLDER DIALOGUE)

A competitive market will only work if all stakeholders are involved in the discussion about the future market and the steps in-between. The European power industry is a key player in this future, and therefore, it must take part in all relevant discussions. Electricity producers have often played a reactive role, responding to developments if and only if the external forces are strong enough. The sector should outline a clear strategy for increasing competition followed by intense communication about this strategy.

Fortunately, the lead electricity industry association, EURELECTRIC, was deeply involved in the works of the Project Coordination Group, as were other stakeholder associations like ENTSO, EUROPEX, and EFET.

Recommendation 5

Specific recommendations for South East Europe Region, the last defined regional perimeter (MORE REGIONAL COOPERATION – BETTER MARKET OPERATIONAL PERFORMANCE)

The South East Europe region is characterised by controversy. There are many similarities in terms of historical background, industry development, energy legislation, strong dependence on Russian generation technologies, and the strong dependence on local suppliers and contractors for transmission grid development. However, there are also significant differences related to operational standards and practices.

In order to set up a SEE regional energy market, some major obstacles have to be overcome. The first step should be the introduction of state-level wholesale markets.

This region's top goal is to prioritise investments in generation and transmission infrastructure. The region has indicated strong interest in renewable generation, particularly in wind. The region also has the potential for hydro to enhance the energy and ancillary services deliveries. That said, the countries in the region must become aware that the sector restructuring process should be conducted on both a national and regional level. This is especially true for small countries with extremely small power systems. This has to initiate the idea and the subsequent initiative for South East European (SEE) regional electricity market.

In order to set up a regional energy market, some major obstacles have to be overcome. A first step in the development of an SEE market will be the introduction of state-level wholesale markets. Besides the existing viable Romanian electricity market, which meets the main European model requirements, there are other countries in the newly defined perimeter of the SEE region such as Bulgaria, Serbia, and Greece that have yet to meet their full potential for market opening and competitive structure building. The others must finalise the restructuring process in the power sector.

Main targets for the market opening are the unleash of the generation capacity for the market competition through VPPs if the ownership structure will not change, the more liquidity given by the day-ahead national markets and their integration, as well as incentives for the eligible consumers to use the eligibility rights in order to switch to another supplier. In order to guarantee harmonised development of the relevant electricity

markets, the Commission is currently drafting a proposal on standard market design. The market design should also include a basic structure for the development of a wholesale market in the area. The main features of a proposed design are a contracts-based market with day-ahead trading, administration by a single regional market operator, and simple (non-market) arrangements for balancing. The process mirrors the EC endeavours for gradual integration of in the EU national electricity markets into a regional and ultimately pan-European market.

Recommendation 6

Need to speed up integration of the Central Eastern market (POLITICAL WILL DETERMINES THE PROGRESS OF MARKET INTEGRATION)

The Pentalateral Forum in the Central Western European market has been successful in the development of the market. In the Central East, however, the progress has been very limited, mostly due to the failure of the Polish, Czech, Slovakian, Hungarian, and Slovenian's to commit. We recommend that these countries, together with the Commission, begin the process undertaken in the Central Western markets and start making firm commitments for a regional market.

Member Committees of the World Energy Council

Albania	Iran (Islamic Republic)	Poland
Algeria	Ireland	Portugal
Argentina	Israel	Qatar
Austria	Italy	Romania
Belgium	Japan	Russian Federation
Botswana	Jordan	Saudi Arabia
Brazil	Kazakhstan	Senegal
Bulgaria	Kenya	Serbia
Cameroon	Korea (Rep.)	Slovakia
Canada	Kuwait	Slovenia
China	Latvia	South Africa
Colombia	Lebanon	Spain
Congo (Democratic Republic)	Libya/GSPLAJ	Sri Lanka
Côte d'Ivoire	Lithuania	Swaziland
Croatia	Luxembourg	Sweden
Cyprus	Macedonia (Republic)	Switzerland
Czech Republic	Mexico	Syria (Arab Republic)
Denmark	Monaco	Taiwan, China
Egypt (Arab Republic)	Mongolia	Tajikistan
Estonia	Morocco	Tanzania
Ethiopia	Namibia	Thailand
Finland	Nepal	Trinidad & Tobago
France	Netherlands	Tunisia
Germany	New Zealand	Turkey
Ghana	Niger	Ukraine
Greece	Nigeria	United Arab Emirates
Hong Kong, China	Norway	United Kingdom
Hungary	Pakistan	United States
Iceland	Paraguay	Uruguay
India	Peru	
Indonesia	Philippines	

World Energy Council

Regency House 1-4 Warwick Street
London W1B 5LT United Kingdom

T (+44) 20 7734 5996

F (+44) 20 7734 5926

E info@worldenergy.org

www.worldenergy.org

Promoting sustainable energy for the
greatest benefit of all

ISBN: 0 946121 38 9