
**Integrating Electricity Markets
through Wholesale Markets:
EURELECTRIC Road Map to
a Pan-European Market**

**Task Force “Market
Development”**



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**Integrating Electricity Markets
through Wholesale Markets:
EURELECTRIC Road Map to
a Pan-European Market**

Task Force on Market Development

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Table of Contents

Executive summary	
1. Introduction	1
2. State of play of integrating markets	3
2.1. Nordic market	3
2.2. Great Britain and Ireland	4
2.2.1 Great Britain	5
2.2.2 Republic of Ireland and Northern Ireland	6
2.3. Western European Market	7
2.3.1 Germany	9
2.3.2 France	10
2.3.3 Austria	11
2.3.4 Netherlands	12
2.3.5 Belgium	13
2.3.6 Switzerland	13
2.4. Iberian market	14
2.4.1 Spain	15
2.4.2 Portugal	16
2.5. Italy	16
2.6. Eastern European market	18
2.6.1 Poland	18
2.6.2 Hungary	19
2.6.3 Czech Republic	20
2.6.4 Slovak Republic	21
2.6.5 Slovenia	21
2.7. South-East European market	22
2.8. Baltic countries	23
2.9. Conclusions on state of play	24
3. Prerequisites for a pan-European market	27
3.1. Regional markets as an intermediary step towards a pan-European market	27
3.2. Wholesale markets as an essential driver for market integration	28
3.3. Underlying principles for a well-functioning pan-European wholesale market	28
4. Road map for a pan-European market	31
4.1. The parallel processes towards a pan-European market	32
4.2. Continued liberalisation of national markets – by 2007	33
4.3. Development within regions – by 2009	35
4.4. Coordination between regions – by 2010	36
4.5. Integration on European level – by 2012	37
4.6. Conclusion	39
Data used	40
Abbreviations used for legal acts in report	40
List of used abbreviations	41

Executive summary

This report looks at the integration of European wholesale markets towards the ultimate goal of the liberalisation process, a pan-European electricity market.

The liberalisation package adopted by the EU legislators in June 2003 provides common regulatory principles and sets clear market opening dates for European electricity markets. These provisions, which envisage that all customers will have the right to choose their supplier at the latest by 1st July 2007, will put an end to the uneven market opening following the 1996 Electricity Market Directive. However, the liberalisation package, which also includes the cross-border Regulation, does not focus on wholesale markets *per se*. Although the package will no doubt contribute to creating a level playing field, it does not clearly address how to go forward. Thus, the liberalisation package can be seen as an important facilitator but it does not show the way towards a pan-European market.

In 2004, the European Commission's DG for Energy and Transport proposed a practical way forward in its Strategy Paper, which sets out the Commission's vision on the development towards an internal electricity market. The proposed approach is that a pan-European market should evolve through the development of regional markets which should then be linked together to form the internal electricity market. The Commission's Strategy Paper addresses a large range of issues, the wholesale markets being one of the main focuses.

European wholesale markets have developed well in a rather short period of time although they are still in transition. Wholesale markets have been established all over Europe with significant volumes traded on OTC-markets and on power exchanges. All major markets have already set up national or regional power exchanges. Early movers show that they have been able to develop liquidity and it is also noticeable that the development of wholesale markets has not been compromised by the exit of American players and the collapse of Enron in 2002. Furthermore, these developments also show that market convergence is happening in reality, either by design (e.g. in the Nordic market) or through the activities of all market participants (e.g. in the Western European market).

Liquid day-ahead and forward markets together with open intra-day and balancing markets reflected in trustworthy day-ahead prices are instrumental to integrating markets. The current situation shows that developing wholesale markets bring convergence of prices in markets where there is sufficient interconnection capacity or where there is a rather high level of harmonisation and co-ordination. The wholesale market developments are a driver for the expansion of electricity markets into regional and ultimately European patterns. The widening of electricity markets into a regional and ultimately a European pattern will increase the number of market players and thus alleviate concerns of market concentration. Such dynamics will also increase liquidity on the trading markets and the need for common rules on transparency. However, to succeed, such integration of wholesale markets will require a strong commitment from and close co-operation between the different market actors, including market participants, TSOs and power exchanges as well as the Commission, regulators and governments.

EURELECTRIC sees the development of regional markets as a pragmatic intermediary step towards the internal electricity market provided that they do not diverge and go in different directions. Nevertheless, the geographical boundaries of regional markets do not appear to be in all cases so evident and may be subject to discussion. This is the reason why regional markets should not develop too rigid, but should allow for some flexibility. If regional markets are developing “naturally”, borders are not always obvious and can change over time or from case to case.

The EURELECTRIC vision for the way towards a well functioning pan-European market for electricity is a series of strongly interlinked wholesale markets resulting in as large price areas as possible and ultimately – if possible – in one single pan-European price area. Achieving this vision will require a number of conditions related to market-places and transmission system operators.

As regards market-places, it is essential that they fulfil at least the following criteria:

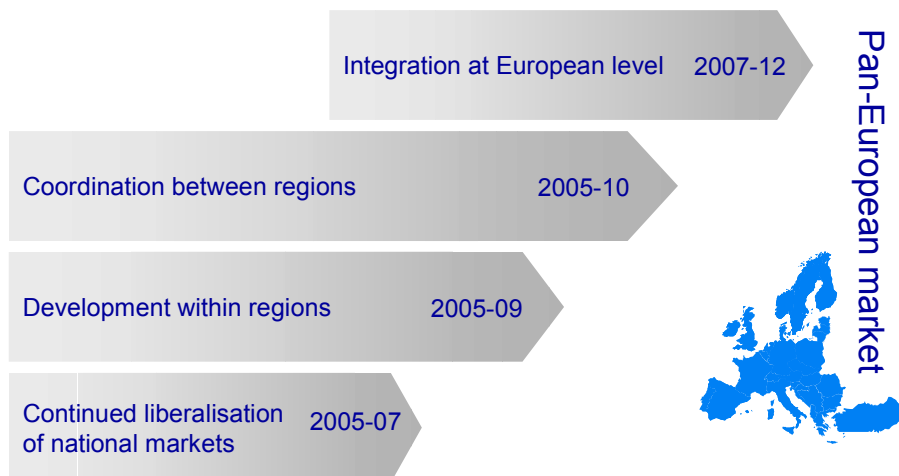
- Have liquid day-ahead and forward markets and open balancing and intra-day markets with trustworthy prices;
- Have a sufficient number of market participants in the day-ahead and forward markets, in particular more large consumers from the demand side;
- Provide transparent access to common sets of market information;
- Have market-based mechanisms for congestion management.

As regards transmission system operators, the following criteria need to be fulfilled:

- Have a set of sufficiently harmonised TSO rules to allow cross-border trading on all markets (e.g. gate closures, nomination procedures, balancing rules, others);
- Have co-ordinated and market-based congestion management mechanisms for bottlenecks;
- Develop interconnection capacity to reduce structural bottlenecks, when economically reasonable.

The following four processes are required and will largely operate in parallel:

Road Map to a European Electricity Market: parallel approach



This report sets out the basic principles for the further development of wholesale markets in Europe as currently perceived. Following a short introduction, the second chapter provides an overview of the current 'state of play' of the different wholesale markets in Europe. The result is a diversified picture with wholesale markets showing different stages of development. Chapter 3 sets out the basic prerequisites of the development towards a pan-European market before entering into a discussion of the EURELECTRIC road map for a pan-European market in Chapter 4. The road map is forward looking and sets out the steps necessary to achieve a pan-European market at wholesale level. In addition, it sets out the conditions on how the markets can work and develop in the future towards a pan-European market.

The road map is based on the current status of development of wholesale markets. It should not be seen as a static model but should develop further over time. Therefore, EURELECTRIC invites all stakeholders for in-depth discussion of the proposed road map in order that the pan-European market may become reality as soon as possible.

1. Introduction

The second EU Internal Electricity Market Directive and the Cross-Border Regulation are now in force and the process of implementing the Directive in national laws is ongoing. The Directive will bring about structural changes to the industry, and sets a timetable for the full opening up of the European electricity markets. Many EU countries have already totally opened their electricity markets, and the remaining countries are all in the process of doing so. As mandated by the Directive, all EU electricity markets must be fully opened up for competition by 1st July 2007 at the latest. As of 1st July 2004, the markets are already open for all non-household customers.

As experience has demonstrated, the Directives and the national legislative framework will ensure market opening, but not necessarily a full harmonisation of market structures and rules. For example, the structure of wholesale markets is today very different from country to country due to the different speeds of market opening: numbers and types of players vary substantially and differences exist in market arrangements and rules. These national differences will continue to exist and full harmonisation is not necessary. However, participants of these different national or regional markets must be able to act in different markets and therefore a high level of compatibility in structures, market rules and the regulatory framework is needed. Differences must gradually decrease to avoid the development of national and regional markets becoming an obstacle to a European market.

The IEM Directive only focuses on the liberalisation of the national electricity markets and does not address directly the integration of markets on a pan-European level. The question of how to proceed to the ultimate goal of the liberalisation process, i.e. that electricity can flow within Europe irrespective of national borders and can be traded on competitive markets, is partially tackled in relation to certain issues in the cross-border Regulation.

In order to initiate in-depth discussions concerning the way to create the internal electricity market, DG TREN issued in 2004 a “Strategy Paper” which outlined a regional approach towards a pan-European electricity market. EURELECTRIC, which strongly supports the vision of a European electricity market and wants to contribute to finding a way forward, therefore decided to draw up a report on the development of electricity wholesale markets and to develop a strategy towards a pan-European electricity market.

Wholesale markets have been organised all over Europe in a rather short period of time. This report focuses on wholesale markets as retail markets will develop further over time based on the development of liquid and increasingly interlinked wholesale markets. Although the majority of trades are still done on a bilateral basis through brokers in OTC markets, the report uses mainly data gathered from power exchanges as this information is publicly and easily accessible. The emphasis of the report is on the way forward and how to achieve the internal electricity market. Therefore, some obstacles -where relevant to the road map- are addressed in this report but the intent is not to deal in detail with current and foreseeable impediments to the development of electricity markets.

The report will firstly look at the current state of play in national and/or regional wholesale markets. The overviews in Chapter 2 show how the wholesale markets in the areas suggested by the Commission's Strategy Paper have developed so far. Based on this descriptive part, Chapter 3 develops the prerequisites necessary for the future development towards a pan-European market. This chapter also sets out briefly the concept of regional markets and what the problems related to this development might be. Finally, in Chapter 4 a road map for a pan-European market will be sketched out. The proposed road map to a pan-European market constitutes of four processes which partly can be performed in parallel. It will also be emphasised that the pan-European electricity market has to remain the focus for all the developments and that regional development can only be an intermediary – if also a pragmatic – step towards achieving this goal.

It should also be noted that the observations and conclusions made in this report are relevant to interconnected systems only and are therefore not appropriate for small isolated systems.

2. State of play of integrating markets

The main characteristics of various European wholesale markets are described in this chapter starting from the regional map developed in the Commission's Strategy Paper. This chapter also provides information on the organisation of European wholesale markets and highlights the trends in the various markets.

The potential regional electricity markets suggested by the European Commission in its Strategy Paper of March 2004 are:

- the Nordic countries (Denmark, Finland, Norway, Sweden);
- Great Britain and Ireland;
- Western Europe (including France, Germany, Benelux, Austria, Switzerland);
- the Iberian peninsula (Spain and Portugal);
- Italy;
- Eastern Europe (including Slovenia, Hungary, Slovakia, Czech Republic, Poland);
- the countries of South-East Europe (Athens Forum process); and
- the Baltic countries (Estonia, Latvia, Lithuania).

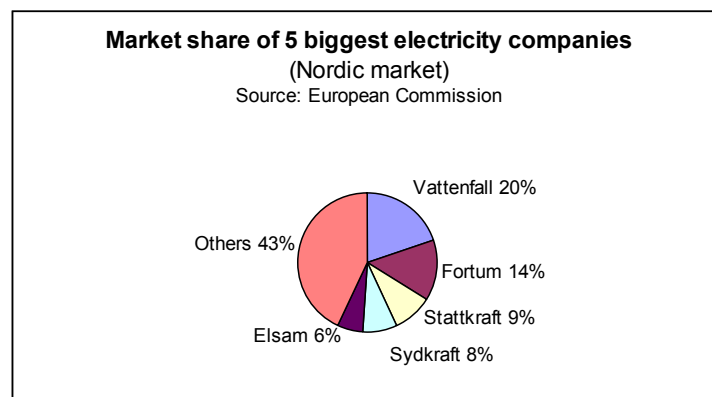
2.1. Nordic market

Main characteristics

The Nordic Market, composed of Finland, Sweden, Norway and Denmark, is a well advanced market. The market is characterised by a versatile generation mix and a very strong role given to the regional power exchange, the Nordpool.

Organisation

The Nordic market has more than 350 generation companies; the three largest generators in the region have a market share of about 40%.



Nordpool offers a physical day-ahead market based on day-ahead auctioning for hourly delivery over the 24 hours of the following day, as well as a continuous hour-ahead Elbas market (in Finland, Sweden and Eastern Denmark). The supply and demand bids in the day-ahead market form the system price from the supply and demand curve for every hour.

Nordpool also offers cleared forwards, futures and options contracts and cleared contracts for differences (cfd) for price area differentials, using the system day-ahead price as the reference price. The futures and forward contracts are traded up to a maximum of three years ahead. In addition to its own contracts, Nordpool offers a clearing service for OTC financial contracts, allowing traders to avoid counterparty credit risks.

There are today 364 market actors from 11 countries active on Nordpool. These include generators, suppliers/retailers, traders, large customers and financial institutions.

Latest trends

The turnover on the Nordpool day-ahead market was 167 TWh or about 40 % of consumption in 2004. This makes the day-ahead price a very credible reference for derivatives trading.

Futures traded in Nordpool accounted for 590 TWh (2004) and the volume of contracts traded on OTC was 1525 TWh (2004). The volumes on Nordpool fell by 42 % in 2003 due to weak hydro conditions resulting in high prices and highly increased volatility.

The decrease can be explained by limits in the mandates of traders. Since spring 2004 the volumes have recovered.

Nordpool	2002	2003	2004
Electricity demand in TWh (DK, FI, NO, SE)	386.5	379.4	388.8
Day-ahead market volume TWh	124	119	167
Term market volume TWh	1019	545	590
OTC Clearing volume TWh	2089	1219	1207
Day-ahead market members			266
Term market members			120
OTC clearing members			325

2.2. Great Britain and Ireland

Main characteristics

Currently Great Britain and Ireland are separate markets, with the only interconnection being between Scotland and Northern Ireland.

Latest trends

There are proposals to construct an interconnector between the Republic of Ireland and Wales by 2008 and alternative approaches to building the interconnector are currently being considered. Also, the European Electricity Mini Forum for the Republic of Ireland, France and the UK in February 2005 recommended improvements for better co-ordination between these countries.

In 2004 the governments of the UK and the Republic of Ireland agreed to implement an All Island electricity market in Ireland with a projected timescale of 2007. First progress has been made towards this objective with the regulators of the Republic of Ireland and Northern Ireland agreeing a Memorandum of Understanding and establishing a Single Electricity Market project.

2.2.1 Great Britain

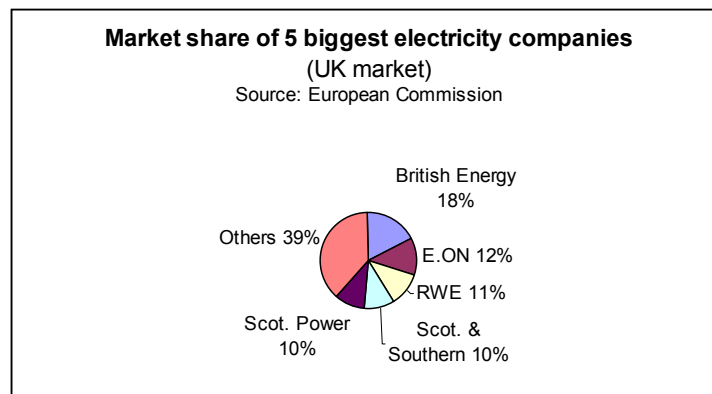
Main characteristics

Important characteristics of the England & Wales wholesale electricity market are a relatively high number of different players and the strong role of liquid bilateral markets. Power exchanges account for a relatively small share of electricity trading, the majority of the trading taking place bilaterally in the OTC markets through power brokers.

A single wholesale electricity market for Great Britain was created on 1st April 2005, with the inclusion of Scotland, by the implementation of the British trading and transmission arrangements (BETTA).

Organisation

The UK market is highly competitive with a range of different participants. The three largest generators have a combined market share of around 40%.



As the England & Wales market is dispersed via bilateral and broker-based trading, it does not have a single index, but rather several competing price indices. Broker-quoted prices are available up to 36-42 months ahead. The main power exchange UKPX offers limited OTC clearing, but no centralised clearing is currently available.

Latest trends

As with continental markets, liquidity in the England & Wales market suffered as a result of the withdrawal of the US-based traders in 2002-2003 (a fall in volume of around 30% has been reported by market reporters since 2002). Despite this, the England & Wales market is still a very liquid trading market with an annual traded volume estimated at around 1,300 TWh for twelve months to July 2004. The volumes traded on the UKPX amount to a very small share of the wholesale market with around 6.2 TWh day-ahead market volume in 2004.

UKPX	2002	2003	2004
Electricity demand in TWh (GB)	374.7	379.0	390.0
Day-ahead market volume TWh ¹	7.2	6.9	6.2
Day-ahead market members			40

2.2.2 Republic of Ireland and Northern Ireland

Main characteristics

The Republic of Ireland and Northern Ireland are two separate markets with trading between markets taking place across the North-South interconnector. Given the low level of interconnection with Great Britain, there is currently little integration into wider EU markets.

Organisation

ESB is the major player in the Republic of Ireland. There have been a significant number of independent generators, who entered the market in the Republic of Ireland following the opening of the market. The market share of ESB, a former monopoly, is now at around 80 % of the generation capacity.

Northern Ireland has just three major power stations with the majority of plants being controlled by the former single buyer. It has limited interconnections to the Republic of Ireland via a main North-South interconnector, and an additional two smaller interconnections.

Both existing markets now have a bilateral market structure (Northern Ireland having previously implemented the single buyer model).

¹ Figures provided by UKPX.

Latest trends

On 31st March 2005, the two Irish regulators published joint proposals for the creation of the Single Electricity Market (“SEM”) which is the first step in the establishment of an all-island electricity market. These joint proposals contain high level design proposals for the new wholesale market structure to apply on an all island basis.

Key features of the proposed market design are a mandatory gross centralised pool, with an explicit capacity mechanism. Further proposed features of the market are prices based on an ex-post unconstrained schedule, constrained on and off payments under certain circumstances, locational charges and loss factors.

Republic of Ireland	2002	2003	2004
Electricity demand in TWh	24.0	24.8	25.4

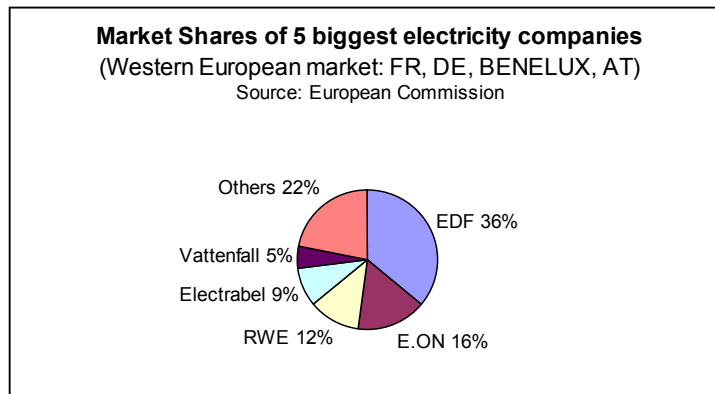
2.3. Western European Market

Main characteristics

The Western European Market comprises in the Commission’s Strategy Paper France, Germany, Belgium, the Netherlands, Luxembourg, Switzerland and Austria. Some of these countries also provide a bridging function to the new Member States situated on their Eastern borders. Growing overlaps between different markets will emerge when markets develop further and market based solutions will become common.

Organisation

The market structure in the countries of the region varies considerably. In some of the countries, the generation structure is rather diversified; in other markets in contrast a smaller number of companies are operating. The overall structure in the region can be seen from the graph below.



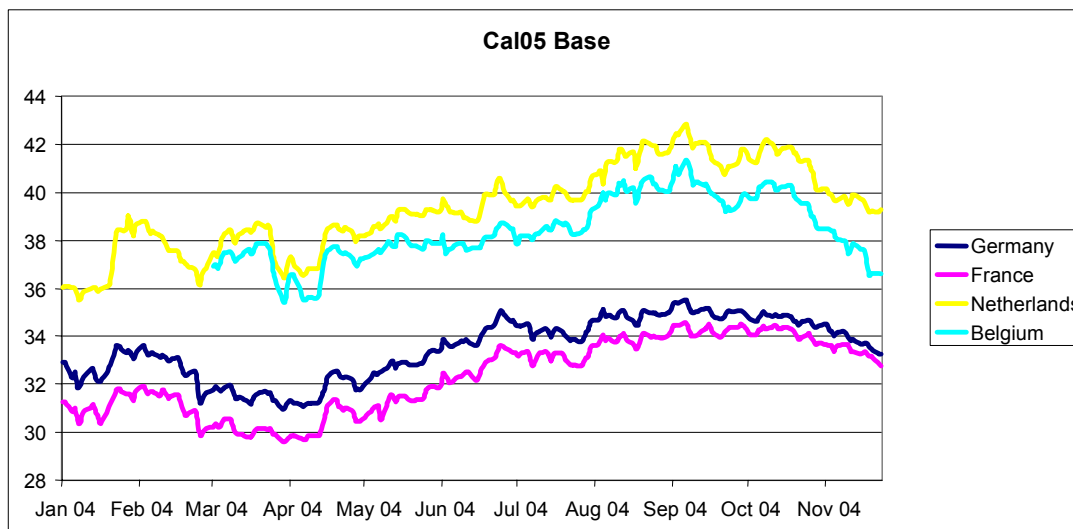
At first glance, the Western European market currently has no regional pattern. It consists of seven different countries, one of them (Switzerland) outside the European Economic Area without deregulation of the electricity market. In four of the countries (Germany, France, the Netherlands and Austria) power exchanges have been established, all of them with a day-ahead market and some with a futures market; one country (Belgium) is currently in the process of building up an electricity exchange. In all countries wholesale trading has been evolving.

Latest trends

Despite the lack of politically-driven market integration, a Western European market is clearly emerging through the activities of the market actors and TSOs themselves. After closer inspection the following two wholesale regions can be observed already if one compares wholesale prices in the national markets:

- Austria, France, Germany, Luxemburg and Switzerland;
- Belgium and Netherlands.

The picture below illustrates on the example of 2004 the prices for a base load delivery for calendar year 2005 in Germany, France, Belgium and the Netherlands. It can be observed that on the whole the price developments follow similar patterns and that prices and markets in central Western Europe are converging due to fewer capacity constraints on the interconnectors.



There is very seldom congestion on the cross-border lines between Austria, France, Germany, Luxemburg and Switzerland. As a result, the day-ahead and forward prices of these five national wholesale markets are converging. During the last years the spread of the forward prices between France and Germany has been continuously decreasing (see graph above). The same development can be observed for the day-ahead prices as the prices on the German, French and Austrian power exchanges are developing almost in parallel and the prices are very close to each other.

Following the appearance of congestion at the German/French border, explicit day-ahead auctions have been implemented during spring 2005. In addition, during the months of winter 2005 a new situation of cross-border congestion appeared for the flows from Austria, Germany and France (also crossing Switzerland) southbound towards Italy.

Between Germany and the Netherlands and between Belgium and France congestion existed in the past the majority of the time. At the beginning of 2005 congestion between France und Belgium was reduced by a substantial increase in cross-border capacity. Almost no congestion has been observed between Belgium and the Netherlands. As a result the day-ahead and forward prices between these two national wholesale markets are converging. In connection with the plans for setting up a Belgian power exchange (Belpex), a common wholesale market between Belgium, France and Netherlands is also in the process of developing.

2.3.1 Germany

Main characteristic

There is a relatively high number of different players active in the German wholesale market with a significant number from outside Germany. As in most other electricity wholesale markets, the majority of deals in Germany are still done on a OTC basis. However, volumes on the EEX have been increasing constantly over the last years.

Organisation

The four largest German generators comprise approximately 70 % of the net electricity generation. There are more than 520 (2002 figure) generators active in the German market.

In Germany, wholesale electricity trading takes place both on the bilateral/OTC market and the power exchange. In 2002, the then two existing power exchanges merged to form the European Energy Exchange EEX AG in Leipzig.

EEX operates a day-ahead market with hourly products (anonymous, bilateral auction) and block products (continuous trading). It also operates a futures market where contracts can be traded for delivery up to six years in advance. The EEX also offers OTC clearing services and introduced trading with options on power futures in 2004.

The prices formed on the exchange benefit from high credibility backed by the large number of market participants and the transparency of the market prices. The EEX prices are the benchmark for the entire market including OTC wholesale and retail business.

Currently, there are 123 participants from 16 countries active on the EEX; more than 50% of those participants are from outside Germany.

Latest trends

Trading volumes on the EEX have been continuously rising and in 2004 reached a total volume of 398 TWh. The day-ahead volume amounts to approximately 12 % of German electricity consumption.

EEX has lately introduced CO2 allowances and has launched physical futures as further trading products. It also publishes a daily reference price for Europe-wide trading in carbon dioxide allowances.

EEX	2002	2003	2004
Electricity demand in TWh (DE)	539	550.1	554.3
Day-ahead market volume TWh	33	49	60
Term market volume TWh	117	151	156
OTC Clearing volume TWh	---	191	182
Day-ahead market members			111
Term market members			51
OTC clearing members			54

2.3.2 France

Main characteristics

Electricity generation in France shows the characteristics of a generation park strongly dominated by thermal generation. France in general exports electricity to the neighbouring countries. Most of the trading participants on the OTC and exchange market are also active in the wholesale markets of the neighbouring countries.

Organisation

The three largest generators account for 97.7 % of the overall consumption in France. The vast majority of electricity is produced in nuclear power plants.

Powernext, the French power exchange, started with a day-ahead market during 2002. It also launched a futures market in June 2004. Powernext will start an emission certificates market during spring 2005. Powernext has about 50 trading members (autumn 2004).

Latest trends

In 2004 the trading volume on Powernext's day-ahead market was 14.2 TWh, which represents approximately 3 % of the overall consumption in France.

Day-ahead prices from Powernext are developing similarly to the German day-ahead prices on the EEX. The movement of Powernext's day-ahead market prices are very similar to the movements of the expected loads of the grid, which are published by RTE, the French TSO.

Powernext	2002	2003	2004
Electricity demand in TWh (FR)	450.9	468.2	477.2
Day-ahead market volume TWh	2.6	7.5	14.2
Term market volume TWh	---	---	10
Day-ahead market members			48
Term market members			15

2.3.3 Austria

Main characteristics

Most of the electricity is traded bilaterally, partly through long-term power purchasing agreements. As there is no congestion at the Austrian-German border, EEX and EXAA can be seen as competitors on the same regional market.

Organisation

The largest generator covers about 55 % of the overall consumption. Nine provincial, several municipal utilities and some foreign companies focus their business on distribution and supply. There are about additional 125 small utilities serving local customers.

EXAA runs a day-ahead market with hourly trading products and block products. EXAA introduced in 2003 a new product called eSPREADS, which is a day-ahead future on differences of indices. Being successful at the beginning, there has been no trade since the end of September 2004. There are currently 29 participants from 9 countries active at EXAA.

Latest trends

The main goal of EXAA in 2005 is to become a platform for the organised and regulated trading of all environmental certificates. In order to bundle liquidity, the trading of CO2 emission allowances will probably be concentrated on a few days per month.

The day-ahead market trading volume rose from 1.3 TWh in 2003 to 1.8 TWh in 2004. The day-ahead volumes traded on EXAA cover about 3 % of the yearly national consumption.

EXAA	2002	2003	2004
Electricity demand in TWh (AT)	58.7	60.9	62.3
Day-ahead market volume TWh	0.6	1.3	1.8
Day-ahead market members			28

2.3.4 Netherlands

Main characteristics

The main wholesale market in the Netherlands is the bilateral market, which covers about 80 to 90 % of the market. The remainder is traded on the day-ahead market. Imported volumes have to be traded through APX.

Organisation

The market share of the six largest generators accounts for approximately 69 % of the total generation of about 92.8 TWh compared to an approximately 31 % aggregate share for distributed generation.

APX offers a day-ahead trading platform for the electricity market in the Netherlands. At the end of 2004, 38 market actors were trading on the APX day-ahead market. By the end of 2004 the futures market Endex has started. Endex also offers OTC clearing services.

Latest trends

The day-ahead market volume on APX stood at 13.40 TWh in 2004. With an increase of about 12 % compared to 2003 APX recovered from a drop in volume in 2003 and volumes are almost back to the level of 2002.

The price level in 2004 was considerably lower than in 2003. Due to the high interconnection level (compared to domestic demand) trade in the Netherlands is strongly influenced by prices in Germany and France.

APX	2002	2003	2004
Electricity demand in TWh (NL)	110.0	109.8	110.4
Day-ahead market volume TWh	14.1	12.0	13.4
Day-ahead market members			38

2.3.5 Belgium

Main characteristics

The wholesale market in Belgium is bilateral as there is no power exchange yet. In the absence of an exchange, Electrabel publishes the Belgian Power Index (BPI). Prices are converging with those of neighbouring markets due to the decrease of congestion on the respective interconnectors.

Organisation

Incumbent utility Electrabel has seen its share in generation decreasing with a remaining share on the Belgian market of around 75 %.

The BPI allows participants to buy and sell day-ahead baseload power in blocks of 25 MW. The volume traded on the BPI in 2004 was slightly higher than 1 TWh, or about 5% of the total wholesale volume of around 20 TWh.

Latest trends

Together with the reinforcements at the Belgian interconnections, the launch of the Belgian exchange Belpex in 2005 will help to further consolidate price convergence between France, Belgium and the Netherlands.

Liquidity on the Belpex will be achieved through market coupling with Powernext and APX. These three countries may then be considered as a regional market.

BE	2002	2003	2004
Electricity demand in TWh	84.0	85.8	87.5

2.3.6 Switzerland

Main characteristics

The electricity market of Switzerland is not deregulated yet; the proposed new energy law is planned to enter into force on 1 January 2007. Due to its geographical position and its hydro-based generation, there is a long tradition of electricity imports and exports with its associated trading activities.

Organisation

The Swiss electricity is produced by 8 major generators. The overall production amounts to 60 – 70 TWh per year.

At the beginning of March 1998 a day-ahead market price index (SWEP), was implemented at the Laufenburg-hub. Only a limited number of market participants have direct access to the national grid and to the borderlines and therefore to the Laufenburg-hub. Based on the fact that almost no congestion exists on the borders with France, Germany and Austria a regional wholesale market has been developing.

Latest trends

During 2003 the underlying trading volume of the SWEP was 5.5 TWh, which represents approximately 10 % of the national consumption. However, it is difficult to estimate the overall wholesale trading volume.

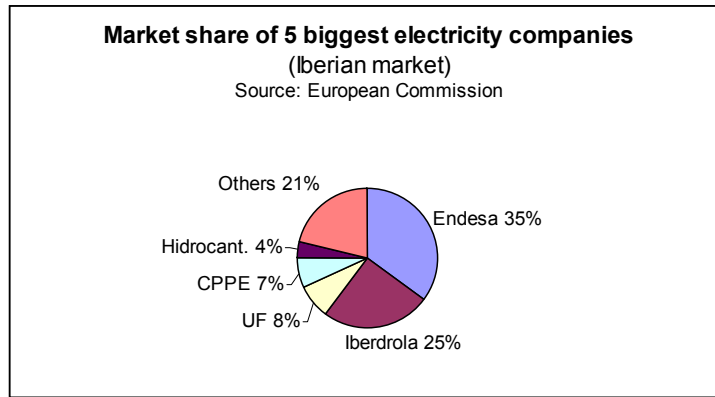
As a result of the possibility of unlimited cross-border trading due to nearly no congestion on the borders, Swiss prices (day-ahead and forwards) are on a similar level with those of the three neighbouring countries (France, Germany and Austria) and are developing similarly. During the winter months of 2005, a new situation of congestion appeared for the southerly flows from Austria, Germany and France, crossing Switzerland.

CH	2002	2003	2004
Electricity demand in TWh	58.1	58.9	60.4
Volume at Laufenburg-hub in TWh		5.5	

2.4. Iberian market

Organisation

The market structure in the future Iberian market will include a small number of large players plus a number of smaller companies from the two countries.



In order to have an integrated Spanish and Portuguese market for electricity (MIBEL), various issues are still to be solved. These basically include coordination of transmission management, harmonization of regulation, including solutions for arrangements that could distort the performance of the integrated market (Stranded Costs and Capacity Payments), and the final blueprint for an electricity exchange.

In MIBEL, companies operating in either Spain or Portugal would benefit from integrated access to both markets and increased interconnection capacity. The common pool will be a voluntary day-ahead market, and a forward market (for physical contracts initially and later for financial ones) will also be created. Bilateral contracts will also be allowed either within each country or across the interconnectors. Interconnection capacity will be increased to allow in practice unlimited cross-border flows in the Iberian market.

In Portugal, the Operator of the Iberian Market-Portuguese Branch (OMIP) has been set up to manage the coming MIBEL forward market. The Spanish electricity market operator (OMEL) has already changed its name to Operator of the Iberian Market-Spanish Branch (OMIE) and will be in charge of managing the MIBEL day-ahead market. OMIP and OMIE should merge late this year to constitute a single operator, the Operator of the Iberian Market (OMI).

2.4.1 Spain

Main characteristics

Since the opening of the market in January 1998, all eligible customers are allowed to trade on free terms for their energy needs. Wholesale energy transactions can freely take place either through the organized pool or via bilateral transactions.

Organisation

The three largest generators in Spain have a market share of 77.73 % of the whole national production (excluding production from renewables).

Distributors in Spain have an obligation to supply customers who have not used the eligibility option and still remain under the regulated tariff option. Distribution companies that provide their retail business within the regulated market will still have to buy their electricity on the exchange under regulated terms.

Bidding into the exchange is mandatory for generators of over 50 MW for the total of their capacity, excluding the portion of power traded through bilateral contracts. Trading on the pool is done on an hourly basis. There is a daily auction the day before and 6 intra-day markets to adjust the selling or buying positions of the different traders to their updated needs. No organised market exists for the moment for bilateral financial or physical contracts in Spain. OMEL also performs the settlement for the results of the matching process of the day-ahead and intra-day markets.

Liquidity in OMEL, measured as the percentage of energy traded relative to total demand, is very high due to two main reasons:

- Currently, only generators trading in the exchange are compensated with the capacity payment but not those trading on bilateral markets.
- Distributors have the obligation to buy all their energy needs at the exchange.

In December 2004 only 2.54 % of the electricity customers were supplied on free terms; this represents a 34 %-share of the total energy market.

Since the beginning of the wholesale market, and in order to keep the income of the generators in the Spanish market close to the 'price of development', a capacity payment has been recognised to those generators that bid on the exchange.² These payments have been reduced over the last 6 years, and now amount to approximately 20.000 €/MW per year or to about 8 % of total generation revenues.

REE, the Spanish TSO, is in charge of operating both the ancillary markets and the balancing market (desvíos) and performs the corresponding settlement including the capacity payments.

² The purpose is to give an economic signal for stimulating new investments and to discourage the early retirement of otherwise unprofitable units with the goal of achieving a proper level of generation adequacy and as a consequence of security of electricity supply.

Latest trends

The design of the Spanish wholesale electricity market is currently under review which will result in a White Paper including suggestions on how to improve the market functioning in Spain. Lately, some general measures to increase productivity in several sectors, including electricity markets, have been proposed. These measures are not yet implemented.

OMEL	2002	2003	2004
Electricity demand in TWh (ES)	233.3	249.9	260.1
Day-ahead market volume TWh	184.6	198.0	201.8
Day-ahead market members			>450

2.4.2 Portugal

Market characteristics

Wholesale trading is currently solely based on bilateral trading arrangements. The majority of the production is still under Power Purchase Agreements (PPAs).

Organisation

The three main players in the liberalized market have a market share as suppliers of about 97 %. The EDP group is still the sole owner of the production in the liberalized market with around 1000 MW installed capacity; the rest of the electricity needed comes through interconnectors. Market shares will decrease considerably as soon as MIBEL becomes effective.

The wholesale market in Portugal is currently solely supported by bilateral contracts. The PPAs are going to be modified so that this production will go to the market. Stranded costs will have to be paid to compensate for the phasing out of these PPAs.

PT	2002	2003	2004
Electricity demand in TWh	45.7	48.4	50.5

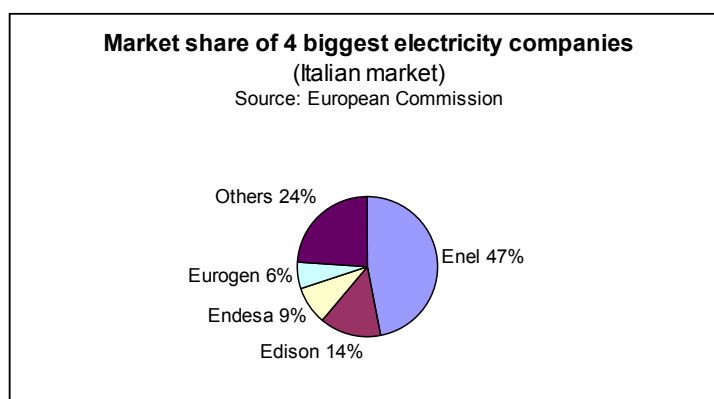
2.5. Italy

Main characteristics

Wholesale trading in Italy mainly takes place on the day-ahead power exchange (IPEX). The volume on the OTC market is very small. Italy still remains a national wholesale market with several price areas. Another characteristic of the Italian market is higher wholesale prices (in the range of 10 – 30 €/MWh higher) compared to other markets of Europe.

Organisation

The Italian market has a relatively small number of market participants with the biggest generator having a market share of about 47%. The market share of Enel decreased through the forced separation of parts of the generation park following the obligation set out in the Italian energy law.



The IPEX, which started up in April 2004, gave rise to the first organised wholesale electricity market in Italy. In the beginning, only the Acquirente Unico³ (= the single buyer) and other suppliers were allowed to trade on the power exchange; consumers were allowed to enter the market as of 1 January 2005. IPEX only runs a day-ahead market, no forward or futures market exists yet. Market participants can buy electricity through IPEX, from the CIP-6 market (incentivised power from renewable resources) or from adjacent countries. Due to congestion within the Italian grid there are various price areas, which is a main obstacle to a nationwide wholesale market. Only in the north of Italy do the necessary prerequisites for a wholesale market exist.

OTC trading started only recently in the Italian market. Deals are still rather infrequent.

Latest trends

Prices are high compared to other markets in Europe. The reasons for this fact are mainly the high variable costs of the current generation park, a delay in building new generation capacity to meet increasing demand, and heavy congestion on the interconnectors from adjacent countries.

IPEX	2002	2003	2004
Electricity demand in TWh (IT)	310.7	320.7	322.0
Day-ahead market volume TWh (from start in April 2004)	---	---	67.0
Day-ahead market members			73

³ Acquirente Unico is supplying electricity to captive customers.

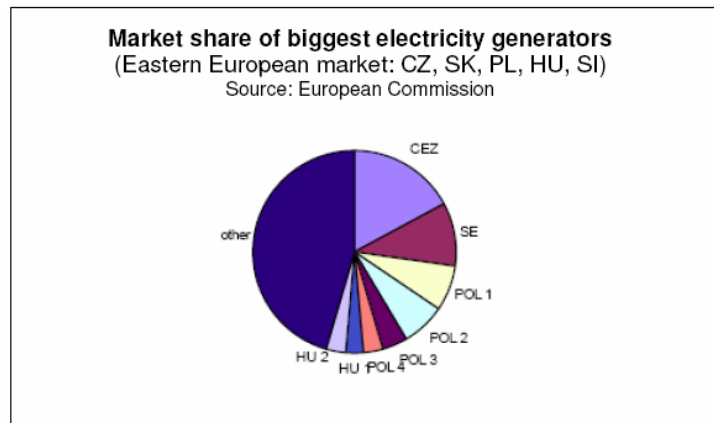
2.6. Eastern European market

Main characteristics

The Commission's Strategy Paper includes Poland, the Czech Republic, the Slovak Republic, Hungary and Slovenia in the Eastern European Market. The countries in this region are still in a transitional phase and need further national developments before they can go a step further and develop towards a pan-European market.

Organisation

As can be seen from the picture below, there is no common pattern in the generation structure in the Eastern European market. The market structure differs considerably from country to country, e.g. Poland has a rather fragmented generation structure unlike e.g. the Czech Republic or Hungary.



The UCTE II synchronous zone was re-synchronised in October 2004. Since then the transmission system of the Balkans is fully available again, which provides a good potential in both trading and security of supply considerations.

Latest trends

The electricity markets in the here covered countries are still in development. Although the liberalisation of these markets is not as advanced as in the markets of most of the EU-15, considerable progress was made already and a lot of efforts are put into the development of competitive markets. However, interconnector capacity and regulatory barriers still exist and necessitate the description of the national markets in this chapter.

An issue which has to be solved by most of the countries in this region is the phasing out of existing long-term power purchasing agreements.

2.6.1 Poland

Main characteristics

About 40 % of the traded volumes in Poland are still covered by long-term power purchasing agreements. Another 45 % is purchased through bilateral agreements, for the balancing market and traded on the Polish power exchange, Giielda.

Organisation

The six largest generators in Poland account for 72 % of electricity generation

The wholesale electricity trading takes place on the OTC market. Only low volumes are traded on the power exchange.

Until the end of 2004, only distribution companies and power plants were allowed to be members of Gielda, which was mainly used by distributors for portfolio optimising. However, since 2005 all power companies are allowed to trade on the Polish power exchange. Although the liquidity of the Polish power exchange is rather low, the index of the day-ahead market is considered as an indicator for the spot market. Based on an initiative of TOE, the association of trading and distributing companies, a reference price index for a spot market will be created based on prices coming from bilateral trades, Gielda and the balancing market.

All market participants may trade on POEE, an internet platform for electricity trading. However, the daily turnover is only about 2,000 MWh.

Latest trends

The decrease in day-ahead market volumes in 2004 is associated with a smaller number of participants. The number of Gielda participants has been reduced as a result of the consolidation process among the state-owned distributors and generators.

Gielda	2002	2003	2004
Electricity demand in TWh (PL)	121.5	126.7	130.6
Day-ahead market volume TWh	1	2.6	1.9
Day-ahead market members			28

2.6.2 Hungary

Main characteristics

The Hungarian electricity market is characterised by a dual market model. Local distribution companies supply energy to public utility consumers (households and non-households remaining in the public utility sector) while traders sell electricity to eligible consumers and other trading companies. Electricity is mainly imported as prices are lower outside of Hungary. Moreover, a large share of the installed capacity is bound by long term PPAs.

Organisation

The four largest power plants produce approximately 70 % of the total Hungarian electricity generation. The total generation was about 31.6 TWh in 2003 while the total import was approximately 14 TWh in the same period.

Only bilateral or telephone trading exists in the day-ahead and longer term market as no power exchange or broker platform is yet available. Also, there is no clearing facility for OTC trades available so far.

Due to long-term agreements, some of the import capacities are bound for the public wholesaler MVM for public supply purposes. Primarily for this reason, the available transfer capacity numbers for the free market are quite low or not even available on different borders.

Latest trends

Currently, the only available price information comes from the MVM marketplace, operated and maintained by the wholesaler MVM as there is no price index available yet. There are approx. 8-10 significant market players generating trading turnover. Half of them maintain only a wholesale trading organisation in Hungary.

HU	2002	2003	2004
Electricity demand in TWh	37.2	38.4	38.3

2.6.3 Czech Republic

Main characteristics

The Czech electricity market was opened for non-household customers in 2004 with full market opening expected by 2006. The trading system is based on bilateral trades.

Organisation

The top three generators have a market share of about 86 % of all electricity produced in the Czech Republic, with the ČEZ group being the biggest generator.

OTE, the Czech electricity market operator, was created in 2001. Their main activities include processing of the supply and demand balance of electricity supplies, organizing the short-term electricity market, the evaluation of deviations i.e. differences between real (metered) and contracted electricity, and the settlement of such deviations. OTE has no specific products so far. The physical electricity is traded on the day-ahead market and intra-day market. The latter was started on 1 January 2004 with a traded volume in 2004 of about 50 GWh.

Latest trends

The volumes on the day-ahead market of the OTE decreased considerably in 2004 after they have been increasing in 2003. The traded volume reached 272 GWh in 2004 which results in a rather low liquidity.

OTE	2002	2003	2004
Electricity demand in TWh (CZ)	58.5	59.9	61.5
Day-ahead market volume TWh	0.4	0.5	0.3
Day-ahead market members			33

2.6.4 Slovak Republic

Main characteristics

The Slovakian electricity market is currently open for all non-households and will be fully open by July 2007. There are not many long term PPAs in place. The market is based on bilateral trading and there is no power exchange.

Organisation

The biggest electricity generator in the Slovak republic has a market share of 83 % of the total electricity production. The rest is split between another generator and several industrial producers.

There is no official price index in the Slovak Republic, neither for a day-ahead nor for a forwards market. Besides the PPAs, major volumes are traded on an annual basis via a “tender” organized by the biggest generator together with the major Czech power producers. There is nearly no congestion between the Slovak Republic and the Czech Republic.

Latest trends

There is also quite a positive movement in the cross-border transmission capacity management. An auction system was realized on an annual, monthly and daily basis. Old contracts are excluded from the annual auctions. The capacities obtained in the annual and monthly auctions are allowed to be traded on an hourly basis with a D-3 days deadline.

Starting from 1 January 2005, a new system of “balancing circles” has been implemented by the TSO which allows licensed companies to develop trading activities.

SK	2002	2003	2004
Electricity demand in TWh	26.1	26.3	26.3

2.6.5 Slovenia

Main characteristics

The Slovenian electricity market was opened for non-household customers on 1 January 2003 with full market opening planned for 1 January 2007. Most of the electricity in Slovenia is traded bilateral.

Organisation

The biggest power producing company has a market share of around 60 % and the second biggest producing company one of around 35 %.

The majority of deals are done bilaterally on a yearly basis. The Slovenian power exchange, Borzen, which was established in 2001, provides for a day-ahead market for trading with all standard products. In addition, Borzen also fulfils the tasks of a clearing house and of a market operator.

Latest trends

The liquidity on Borzen is rather low with a total volume of trading in 2004 of approximately 281 GWh, which is about 2.2 % of the total consumption in Slovenia in that year.

SI	2002	2003	2004
Electricity demand in TWh	11.7	12.1	12.3

2.7. South-East European market

Main characteristics

The so-called Athens Forum process intends to develop a South-East European energy market. The countries covered by this process are Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, FYR of Macedonia, Greece, Hungary, Italy, Romania, Serbia and Montenegro, Slovenia, Turkey and the United Nations Interim Administration for Kosovo (UNMIK).

Organisation

The market structure of the South-East European electricity market is in development. The European Commission is negotiating with the countries in the area a treaty to set up a South-East European Energy Community to further regional integration and in a next step to integrate the market into the internal electricity market of the European Union.

The Commission is currently drafting its proposal on standard market design for the relevant electricity markets in order to guarantee a harmonised development. The market design should also include a basic structure for the development of a wholesale market in the area. However, a first draft of a market design for the wholesale market was proposed by the regulators. The main features of this proposed design are a contracts-based market with day-ahead trading administrated by a regional market operator, and simple (non-market) arrangements for balancing.

Some benefits from electricity trade in SEE are already realised with volumes traded around 9 % of final demand, rising to 14 % if trade with Greece and Turkey is included.

Trade is typically on a short-term basis, and – as markets are still developing – is characterised by limited competition, relatively high transaction costs and some difficulties in exploiting short-term opportunities for trading.

Latest trends

The major development in the area is the ongoing negotiation of the energy treaty which is expected to be signed in the second half of 2005. A first step in the development to a SEE market is the introduction of state-level wholesale markets.

South-East Europe (countries not yet covered above)	2002	2003	2004
Electricity demand in TWh (Bulgaria)	32.0	32.4	31.2
Electricity demand in TWh (FYR of Macedonia)	---	7.2	7.4
Electricity demand in TWh (Greece)	50.9	n.a.	n.a.
Electricity demand in TWh (Romania)	47.5	49.4	50.7
Electricity demand in TWh (Turkey)	126.9	131.5	143.0

2.8. Baltic countries

The three Baltic countries are currently not yet linked to the European grid but are still connected only to the Russian/CIS electricity system. The power systems of the three countries work in parallel with those of Russia and Belarus.

Estonia got a derogation for the implementation of the second liberalisation package; the market is currently only open for customers with an annual consumption of over 40 GWh.

The declared market opening in Latvia is 44 %, which provides all customers with an annual consumption of more than 1 GWh with eligibility. The country decided for a pool market design.

Lithuania's market is open for non-household customers. The wholesale market in Lithuania is primarily based on bilateral contracts; the remainder of the electricity production is used to comply with public service obligations and is sold on auctions.

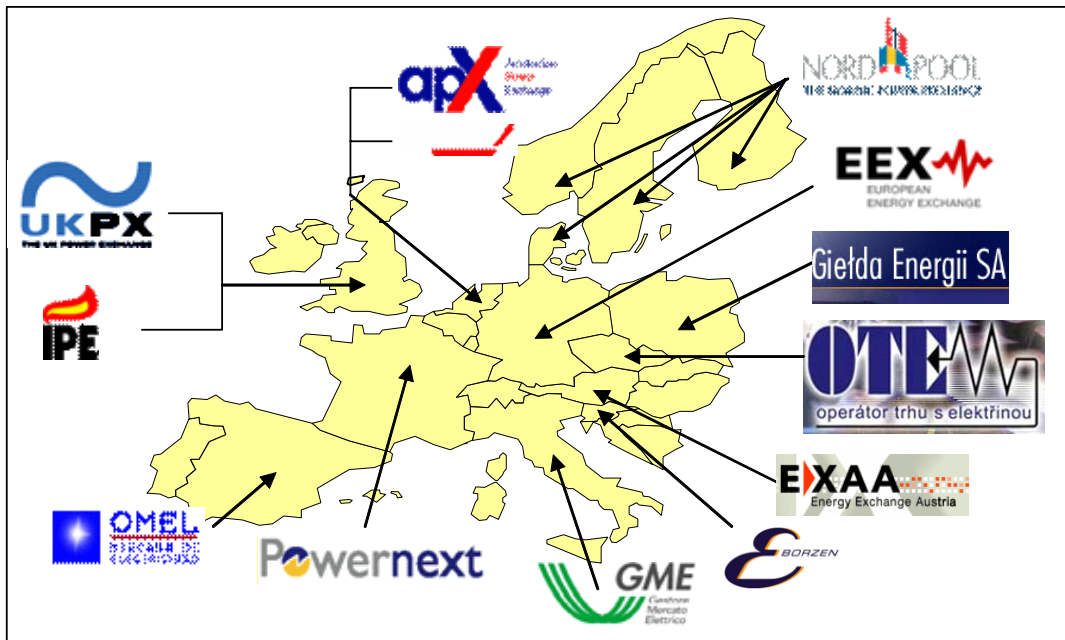
However, as there is not much data available for these three countries, the report will not go into further details on the Baltic countries.

Baltic countries	2002	2003	2004
Electricity demand in TWh (Estonia)	6.9	7.2	7.3
Electricity demand in TWh (Latvia)	6.1	6.3	6.5
Electricity demand in TWh (Lithuania)	9.0	9.4	9.8

2.9. Conclusions on state of play

As can be seen from the national/regional reports above, Europe is in a transitional phase of the development from national markets to a European market. The descriptions also show that a pan-European market does not yet exist. However, considerable commercial exchanges of electricity do take place already between different markets. One indication for the ongoing regional and European integration is the convergence of wholesale prices between adjacent areas.

All major markets in Europe have now also established a national or regional power exchange, demonstrating the increasing role of a centralised market-place. To date, 13 power exchanges exist already in the European Economic Area. In addition, a power exchange is in planning in Belgium.

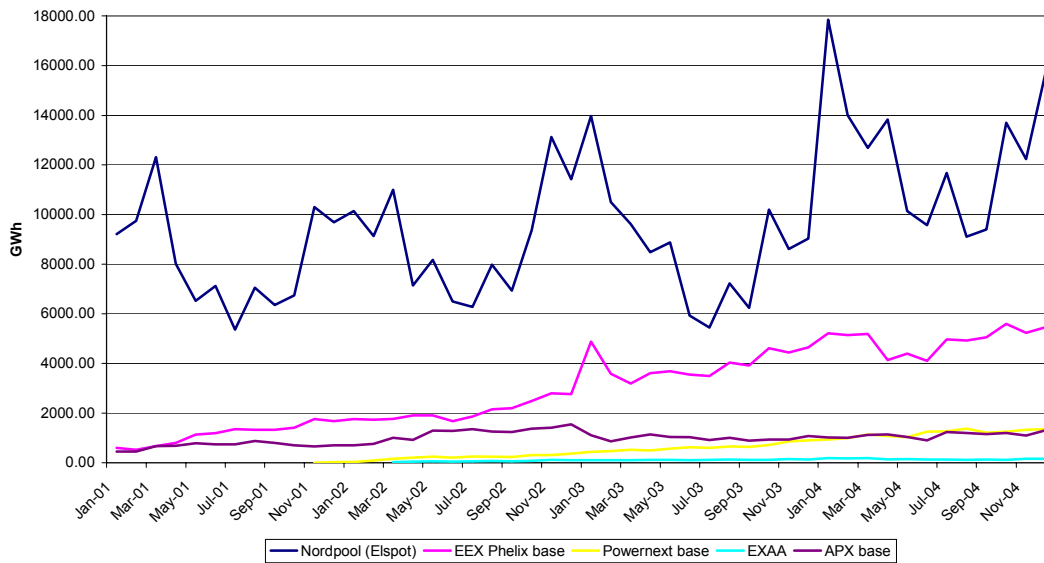


Despite the exit of some American players from European markets in 2002, market liquidity has picked up again with increasing traded volumes and steadily increasing numbers of market participants.

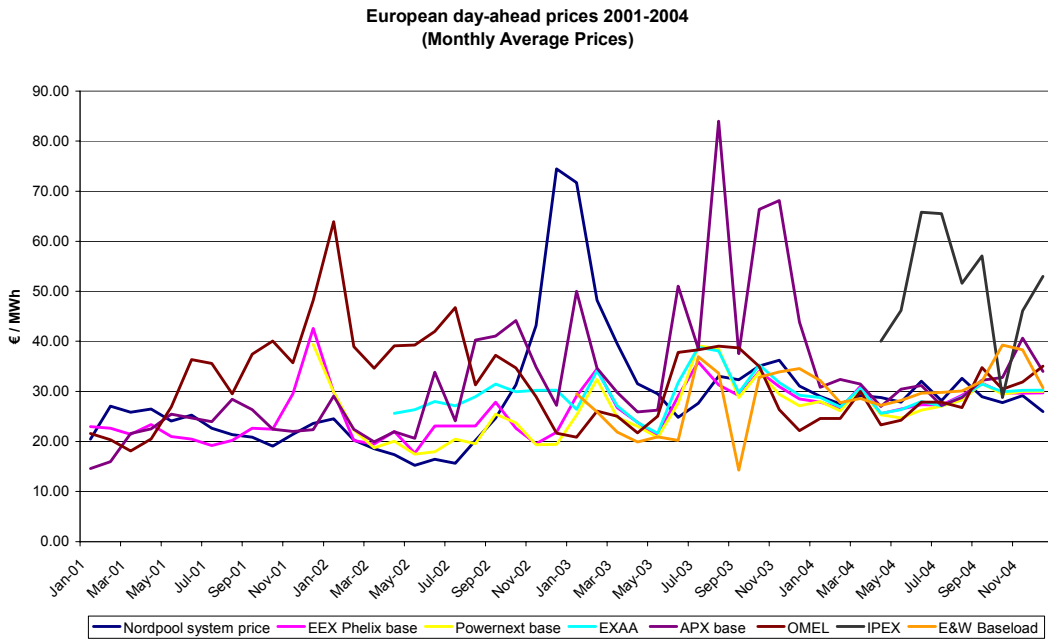
The total traded volume in all Western European markets in 2003 was about 7,785 TWh. As stated above, the majority of trades are still done in OTC markets, which amounted to about 6,471 TWh in 2003 compared to about 1,314 TWh traded volumes on power exchanges.

The following graph shows the development of volumes of the day-ahead markets of some selected *power exchanges* since 2001. The graph does not include exchanges where bidding is mandatory in line with the national market design. Liquidity on most exchange-based day-ahead markets is increasing. Nordpool, EEX and APX are generally regarded as the most liquid power exchanges at the present time if volumes on the power exchange are compared to national/regional electricity consumption. As will be shown further down, liquid day-ahead markets are the basis for functioning forward markets.

Development Volumes on the day-ahead markets 2001-2004
(monthly figures)



The following graph shows the development of prices for baseload power on the major exchange-based day-ahead markets, except for England & Wales for which OTC figure are used. It can be seen that prices for day-ahead delivery in most markets have been converging over time towards similar levels with the important exception of Italy, where day-ahead prices are generally higher than in the rest of Europe as discussed above. Price differences exist, in particular where there are bottlenecks on interconnectors. It should be emphasised that reliable prices are the basis for proper market functioning, as will be made clear in the next chapter. It can also be seen from the graph and the descriptions in this chapter that regional markets are developing already in the wholesale markets.



3. Prerequisites for a pan-European market

The objective of opening electricity markets, as intended in the initial 1996 IEM Directive, was to create a single European market for electricity. The adoption of the 2003 Directive has clearly maintained this goal unchanged even though further experience showed that establishing a pan-European market implies more than just dismantling monopolies and setting common regulatory principles.

The Florence Forum was founded back in 1998 with the specific aim of addressing the issues which were not tackled in the IEM Directive but still were key to intensifying trade between the Member States. The Forum has provided a platform for discussions on issues of cross-border relevance and helped foster developments on the inter-TSO compensation mechanisms and the governing principles for congestion management. The main principles agreed at the Forum were introduced into the cross-border Regulation which was adopted at the same time as the 2003 Directive.

The issue of the *integration* of electricity markets came rather recently into discussions at the Florence Forum. The Commission unveiled at the 9th Florence Forum in autumn 2002 a first draft of its “Strategy Paper” setting out a proposed way towards a pan-European market. The text gave rise to consultations with stakeholders and further improvements by the Commission. It resulted in a forward-looking and programmatic paper which was published in March 2004 with the status of a DG TREN document. This was the first time that a Commission paper made a link between the reality of the markets and the steps needed in order to reach the ultimate, but still rather abstract, objective of a European-wide electricity market.

3.1. Regional markets as an intermediary step towards a pan-European market

The emerging *regional approach* appeared as a new concept and raised a number of questions in relation to Commission policy. Some regarded it as a pragmatic attitude from the Commission, recognising the state of development in electricity markets. Considering that the European-wide internal market will not emerge instantaneously, the intermediary step of regional markets was perceived as a logical and appropriate approach. Other observers viewed the Strategy Paper as a fundamental policy shift in the establishment of the internal electricity market, in which the Commission’s focus was no longer Europe-wide but primarily regional.

The introduction of regional markets provided valuable input for the way forward to a pan-European market and there does not seem to be any clear alternative to this proposal at the present time. It is important to emphasise that strongly interlinked markets should be created in the first place irrespective of national borders. Regional markets are a positive approach only insofar as they are a tool to attain the internal electricity market, widen the geographical scope of electricity markets and, as a consequence, help to reduce market concentration. Therefore, the regional approach can be seen as a pragmatic means to fostering electricity market development and in this regard it constitutes a desirable intermediate step.

However, the regional approach also implies some limitations which should not be ignored. A too rigid approach in the design of regional markets raises a number of question marks in relation to peripheral countries. Care must be taken that by integrating markets through regional markets, this does not lead to regional markets deepening in different directions and ultimately being a hindrance to achieving a pan-European market. Regional markets however should be flexible enough to accommodate the variable state of development across Europe and the evolving and changing circumstances as European electricity markets develop. Electricity markets are still in a transitional phase which should be recognised and accommodated within the regional framework. Regional markets therefore should not be viewed as static concepts rooted in the present. The Commission recognised the risk of diverging developments in the regions: when organising the round of “Mini Fora” on congestion management following the 11th Florence Forum, the Commission did not follow the rigid frontiers developed in its Strategy Paper but rather went for a flexible approach where overlapping countries were invited to several regional meetings.⁴ Regional markets should therefore not be looked at as a new policy objective of the Commission.

This is the reason why this report is looking into the necessary prerequisites for a pan-European market to ensure that the regional approach is accompanied by a clear vision supporting the development of a liquid and transparent electricity market.

3.2. Wholesale markets as an essential driver for market integration

The IEM Directives (the 1996 Directive, then superseded by the 2003 Directive) and the cross-border Regulation have set common regulatory principles together with final market opening dates that will put an end to the uneven opening up of electricity markets. Whilst these common principles are necessary conditions to foster market development, they may in themselves be insufficient to ensure that there will be a spill-over effect from national to a European wide market.

Wholesale markets, as they grow, constitute a tremendous driver for market integration. Therefore, wholesale trading and achieving liquid wholesale markets are instrumental to integrating markets towards a pan-European scale. Looking at the development of wholesale markets, it is important to note that the collapse of ENRON and the fact that a number of American players left the market did not compromise their development. Chapter 2 of this report presents the state of play of power wholesale markets and acknowledges how much they expanded in a relatively short period of time. At the time of writing this report, there are no fewer than 13 power exchanges in place and a fourteenth one is in the pipeline. Day-ahead prices are converging in a number of markets and the volumes traded on market-places are steadily increasing. This evidences the strength and the potential of wholesale markets. However, as already pointed out, developing strong and liquid wholesale markets is an on-going process which is not yet completed.

3.3. Underlying principles for a properly functioning pan-European wholesale market

In this chapter, we consider what is meant by a pan-European wholesale market and then reflect in Chapter 4 on how to get there.

⁴ For example, Germany and France were part of four different Mini Fora (Germany: Central Western Europe, Nordic countries, Central Southern Europe and Central Eastern Europe; France: Central Western Europe, South Western Europe, Central Southern Europe and UK&Ireland).

Once the 2003 Directive and the cross-border Regulation are fully in place in all Member States and provided that they are applied properly, this should provide at European level an appropriate regulatory framework to allow cross-border trade to further develop. With the enforcement of this package, and considering that the framework for the development of liquid and strongly interlinked wholesale markets has been set, further market integration should, as far as possible, be driven by market forces.

The basic structure of a wholesale market and the possible corresponding trading markets are shown in Figure 1. The picture also addresses the major building blocks of a liberalised wholesale market which are to be developed within the framework set up by the implementation of the electricity directives.

The major building blocks are:

- Well-designed and functioning transmission and system services managed by TSOs; and
- Functioning wholesale trading provided by OTC markets and power exchanges.

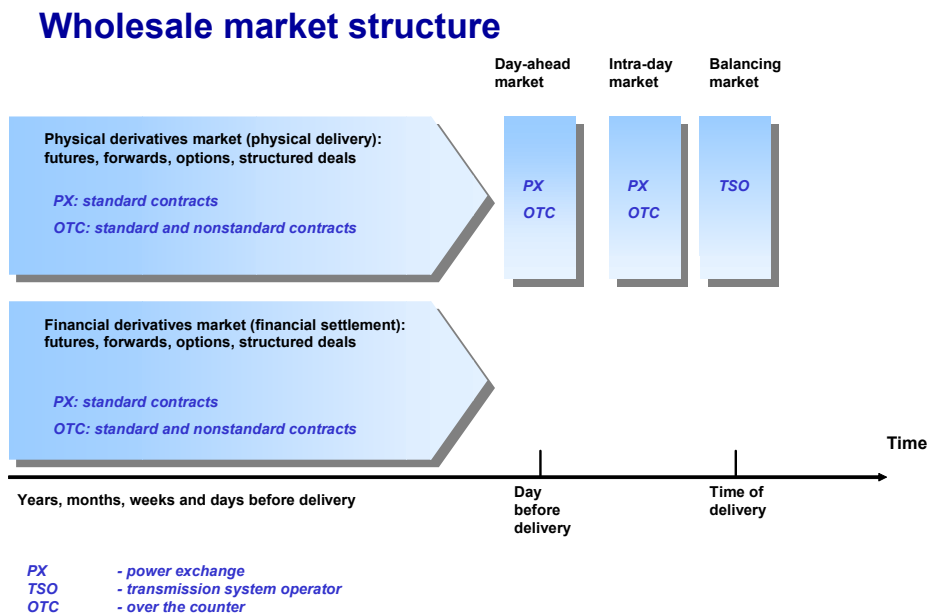


Figure 1: Wholesale market structure⁵

The EURELECTRIC vision for the way towards a properly functioning pan-European market in electricity consists of a series of strongly interlinked wholesale markets comprising the enlarged EU and other closely associated States resulting in as large price areas as possible and ultimately – if possible – in one single pan-European price area. This requires trustworthy day-ahead prices, open intra-day and balancing markets and efficient and coordinated market-based mechanisms for congestion management. The development must be underpinned by solid involvement by all market participants and by a common body of available information. This description can be seen as a leading objective which requires a number of conditions related to market-places and transmission system operators to be met.

⁵ For details see the EURELECTRIC report “Regulatory Aspects of Electricity Trading in Europe”, February 2003, pages 6 and 7.

It is essential that market-places fulfil at least the following criteria:

- Have liquid day-ahead and forward markets and open balancing and intra-day markets with trustworthy prices;
- Have a sufficient number of market participants in the day-ahead and forward markets, in particular more large consumers from the demand side;
- Provide transparent access to common sets of market information; and
- Have market-based mechanisms for congestion management.

Having a central clearing function for the forward market is helpful for increasing liquidity and reducing counter-party risks by attracting more financial market participants.

Transmission system operators also have an important role to play in facilitating the market functioning. In this regard it is crucial that the first two criteria in the following list be completed in the short term and the third one developed in the medium term:

- Have a set of sufficiently harmonised TSO rules to allow cross-border trading on all markets (e.g. gate closures, nomination procedures, balancing rules, others);
- Have co-ordinated and market-based congestion management mechanisms for bottlenecks;
- Develop interconnection capacity to reduce structural bottlenecks, when economically reasonable.

In order for such a pan-European market to develop, it is essential that sufficient confidence in the market be built up and that the development of wholesale markets should not be hindered by undue intervention, especially in view of the huge investments needed in the electricity sector. It is of utmost importance that regulators and governments refrain as far as possible from intervening on the market, in particular on the price level or on the demand for investment. In this respect, much of the success of developing wholesale markets will depend on policy makers' and regulators' ability to let the market work. Reliance on the market will reinforce the trust of all stakeholders, in particular consumers.

Furthermore, in a multi-dimensional market, where other policy objectives such as environmental protection and security of supply are particularly intertwined, consistency in the development of policy-making is essential. In this respect, the uncoordinated development of renewable energies may have far from negligible distortive effects on the functioning of the markets. Co-ordinated policies on security of supply are also a necessary requirement for fully integrated electricity markets.

4. Road map for a pan-European market

Electricity markets are in a transitional phase in which markets are no longer purely national but are not yet pan-European. Strongly interlinked wholesale markets underpinned by solid co-operation between power exchanges and TSOs, trustworthy prices and efficient market-based mechanisms for congestion management should be the core of the development towards the pan-European market. The building blocks of a liberalised wholesale market also include well-designed transmission and distribution system services, together with a functioning market structure for wholesale trading.

Further integration of markets does not require one standard framework for all those issues for the whole of Europe. A sufficiently harmonised regulatory framework and sufficiently harmonised trading rules will deliver this vision. Harmonisation should be pursued only where it is cost-efficient and proportionate to the expected benefits. No single model should be imposed on other regions or on the whole of Europe. Whilst keeping the European goal as the focus, different regional models should be possible so long as they can be combined in the end to form the pan-European market.

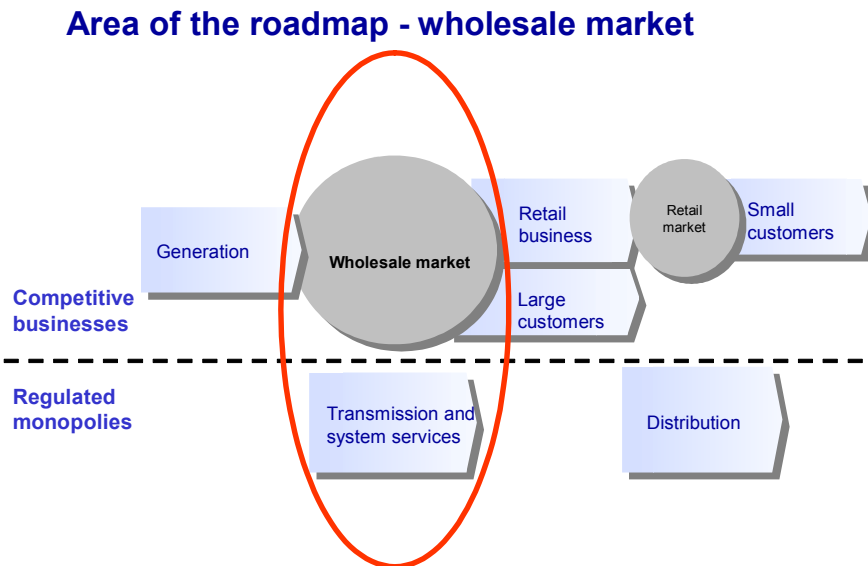


Figure 2: Area of the roadmap

EURELECTRIC's roadmap focuses on the *integration of the wholesale markets* in Europe (see Figure 2). The opening-up of electricity markets in the early stages allowed for competition in generation which then led to increased competition in the wholesale markets. The rationale behind this road map is to use the expansion of competitive wholesale markets as a lever for the development towards a pan-European electricity market. Liquid and strongly interlinked wholesale markets underpinned with trustworthy prices will boost the development of retail markets across borders and introduce a more direct link between wholesale and retail prices.

The road map is intended to be open and flexible so as to allow different developments and regional specificities, as long as these fit into the ultimate goal of a pan-European market.

In drawing up this road map, EURELECTRIC intends to highlight the necessary steps leading to a properly functioning pan-European wholesale market. This should be based on a sound and appropriate design so that wholesale markets develop and function in a way that is self-sufficient and minimises the need for regulatory intervention. Thus, this road map seeks to maximise the role of market participants by ensuring that a proper basis is established to allow unimpeded and smooth functioning of those markets.

In the remainder of Chapter 4, EURELECTRIC sets out the actions needed and the parties involved in progressing towards a pan-European wholesale market. Note however that relatively immature markets may require greater regulatory involvement (e.g. in market design, etc.), whereas in more developed markets, market participants will play more of a leading role in shaping developments.

4.1. The parallel processes towards a pan-European market

There are basically four processes in the roadmap towards a pan-European electricity market:

- Continued liberalisation of national markets;
- Development within regions;
- Coordination between regions;
- Integration at European level.

These processes are closely interlinked and are partly based on each other. It is not necessary for one process to be finalised before commencing the other processes. At least the first three phases can and should be developed *in parallel* in order to progress to a pan-European wholesale electricity market.

The following picture illustrates the four parallel processes and also indicates the time span in which the different processes should be carried out.

Road Map to a European Electricity Market: parallel approach

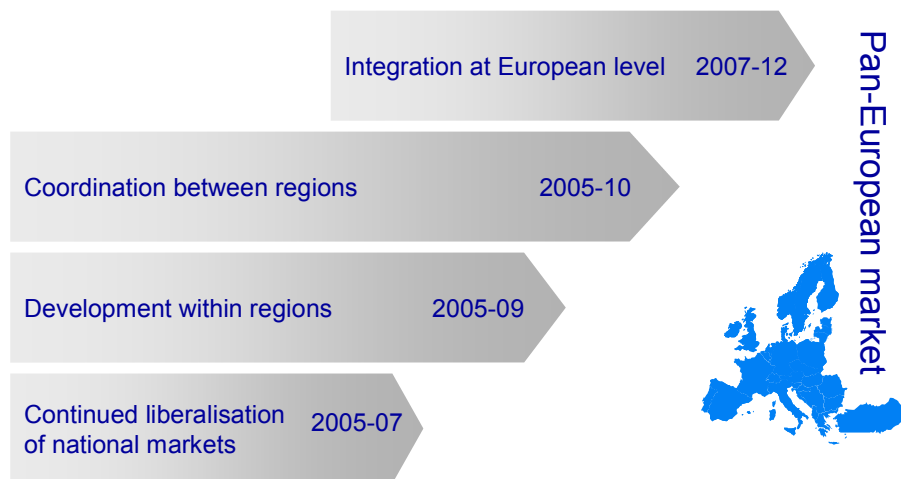


Figure 3: Road map

4.2. Continued liberalisation of national markets – by 2007

Liberalisation of national and/or regional wholesale electricity markets have followed different speeds and paths and also started at different points in time. The second IEM Directive set the framework for a more harmonised approach to market liberalisation and for full market opening not later than provided by the deadlines set, i.e. not later than 1st July 2007. The development of liberalised wholesale markets in all Member States is a necessary *prerequisite* for the integration of the markets and all further developments. Therefore, a basic requirement for all Member States is to implement the IEM Directive as fast as possible. In addition, the necessary guidelines under the cross-border Regulation must be developed and enforced in a timely manner, as they also strongly impact on the development of a level playing field in Europe.

Also needed is the development of liquid trading markets (day-ahead and forward markets) combined with sufficient market transparency. Where such markets do not exist yet, a consistent framework for the development of liquid and competitive trading markets must be established to facilitate the entry of new market participants into the wholesale markets. On the other hand, where these markets already exist, demand-side participation is important to achieve an efficient balance between supply and demand. Therefore, it is desirable that large consumers directly participate in the wholesale market.

Another prerequisite for the development of liquid wholesale markets is the trust of the market participants in the market. Therefore, market transparency and information exchange in the wholesale markets must be harmonised to ensure that all market participants have the same information at their disposal.

Currently, a number of countries still regulate end-user prices. As price regulation and – even more so – the imposing of price caps distort the markets, they should be abolished for both wholesale and retail markets as soon as possible.

Long-term power purchasing agreements (PPAs) might also constitute a market hindrance. This is often the case for those PPAs which were entered into before the start of the liberalisation process as they are in general not in line with the principles governing a competitive electricity market. If this is the case, long-term PPAs should be terminated as far as possible with proper and fair compensation being given to the parties involved reflecting market prices. However, as long as PPAs do not hinder competition and the development of liquid cross-border trading markets, the individual generators and suppliers should be free to decide on the duration of any given agreement with their customers.

In addition, authorisation procedures for new investment in generation and transmission lines must be facilitated. Currently, it takes far too long to build a new power plant or new transmission lines to be able to react to market requirements.

Developments and actions	Involved Parties
Implement Directive 2003/54/EC	Governments
Develop guidelines under the cross-border Regulation	Commission/ Regulators
Where absent, establish a framework for day-ahead, forward, intra-day and balancing markets on a national or already regional level	Governments/ Power Exchanges/ Market Participants/ Brokers/ TSOs/ Regulators
Where wholesale markets already exist, encourage demand-side participation in day-ahead markets	Market Participants (especially large consumers)
Determine market transparency and information exchange	Market Participants/ TSOs/ Power Exchanges/ Regulators
Where long-term power purchasing agreements are not in line with market liberalisation, terminate PPAs as far as possible	Governments/ Regulators/ Market Participants
Abolish remaining price regulation and price caps (for wholesale and retail markets)	Governments/ Regulators
Facilitate authorisation procedure for new investment in generation and transmission lines	Governments/ Regulators/ other relevant authorities/ TSOs

4.3. Development within regions – by 2009

The development within regions must allow enough flexibility so that national markets can integrate in more than one region and thereby provide a bridging function between different regions. The ultimate goal of a pan-European market must remain the focus of all developments and, therefore, sufficient harmonisation within interlinked markets is necessary. The development within regions is ongoing and positive examples for such a development – on both formal and natural basis – can already be seen in Europe. All processes needed for regional development should be finalised at the latest by 2009.

This process includes the development of regional electricity markets and at the same time enhanced co-operation within regions between national markets. In order to achieve greater integration within regions, the basic regional transmission infrastructure combined with a corresponding trading framework must be created. This also necessitates further harmonisation within regions of the rules governing market transparency and the provision of data. These measures are the basis for the development of regional day-ahead, forward, intra-day and balancing markets through common trading principles and common trading products to be applied for trading both in power exchanges and on OTC-markets.

On the transmission side, the key questions relate to developing common principles for grid investments, grid charging and efficient congestion management with TSOs taking the leading role. Regional transmission charging principles should be introduced to create a level-playing field for all market participants. All grid congestion should be managed by market-based methods in order to achieve enlarged wholesale markets and, in cases where no structural bottlenecks exist, a single regional price area. Congestion should be managed as far as possible where it is located. “Borders of regional markets” should develop along points of structural congestion irrespective of national borders. In order to reduce structural bottlenecks, there should be co-ordination between TSOs and regulators in the planning process for new interconnectors.

As market development is closely linked with the need to ensure security of supply, the development of such regional markets should be accompanied by co-ordinated security standards on a regional basis, e.g. on emergency actions, operational reserve levels and cross-border flows. This is essential in order to avoid market distortions and to ensure compatibility, in particular in areas where different TSO organisations interface and harmonisation across these borders is needed.

In this context it is also important to state that decisions on generation investment should be based on market price signals. Where a Member State provides incentives for the building of certain generation facilities, these incentives should be harmonised within the regions as well. This should also include a harmonised and market based approach towards support schemes for renewables.

In order to have regional markets developing well and smoothly, close cooperation between regulators, TSOs and power exchanges, in interaction with all other market participants, will be key.

Developments and actions	Involved Parties
Develop regional day-ahead, forward, intra-day and balancing markets notably through common trading principles and common products	Governments/ Power Exchanges/ Market Participants/ Brokers/ TSOs/ Regulators
Harmonise market transparency and provision of data within regions	TSOs/ Power Exchanges/ Market Participants/ Regulators
Introduce regional transmission charging principles	TSOs/ Regulators
Manage grid congestion through market-based methods to achieve enlarged markets and a single regional price if no structural bottlenecks exist	TSOs/ Power Exchanges / Market Participants
Co-ordinate planning processes for new interconnectors	TSOs/ Regulators
Co-ordinate security standards on a regional basis, e.g. emergency actions, operational reserve levels, cross-border flows	Market Participants/ Governments/ TSOs
Develop generation investments based on market price signals, and, if any, harmonised incentives for generation investment within regions	Market Participants/ Governments/ Regulators
Harmonise market-based support for renewables	Commission/ Governments
Enhance co-operation within the regions	Regulators/ TSOs/ Power Exchanges/ Market Participants

4.4. Coordination between regions – by 2010

In parallel to the development within regions, there must be further coordination between regions. To a certain extent, this process has already started with the round of Mini Fora which took place between December 2004 and February 2005 all over Europe. The participants in those Mini Fora also quite often included market participants from areas outside the core of a potential regional market. However, as already pointed out above, regional markets do not necessarily have clear borders but should be flexible in order to allow the development of overlapping regions which might make achieving the ultimate goal of a pan-European electricity market easier. In order to ensure a flexible development of markets, coordination across borders, i.e. between regional markets, is necessary. Proper inter-regional coordination should be established at the latest by 2010.

Transparent congestion management principles should be created across regions through market-based methods in order to enlarge price areas with increasing liquidity and decreased area price risks. Additional measures should be implemented, if possible, to improve the utilisation of the transmission capacities on existing interconnectors. In order to reduce structural bottlenecks, further network capacities should be built between regions when price differences give the signal to build them. The European Commission must ensure that a harmonised framework is in place which provides a transparent way to determine the necessary cross-border capacities within regions and ultimately within a pan-European electricity market. The actual decision on which capacities are to be built must be left to the system operators in close co-operation with the regulators (and if necessary the national governments). A regional and European perspective must be applied in the planning and development of interconnector capacity so as to ensure coherent development of integrated European networks.

TSOs, power exchanges, the European Commission and regulators, in interaction with all market participants, must enhance their cooperation across regional markets in order to enable the further integration of markets.

Developments and actions	Involved Parties
Manage congestion through coordinated and transparent market-based methods to achieve as large price areas as possible	TSOs/ Power Exchanges/ Market Participants
Improve utilisation of the transmission capacity on existing interconnections	TSOs/ Power Exchanges
Co-ordinate system planning processes with a regional and ultimately European perspective	TSOs/ Regulators
Co-ordinate security standards between regions	Commission/ Governments/ Regulators/ TSOs
Enhance co-operation between regional markets	TSOs/ Power Exchanges/ Commission/ Regulators/ Market Participants

4.5. Integration at European level – by 2012

As stated above, the ultimate destination of this road map is an internal electricity market with as large price areas as possible and ultimately – if feasible – one single price area. This has to be the overall focus for all the parallel developments described above. In order to establish an effective pan-European wholesale market and also to widen retail markets, an integration process at European level has to take place. This process may only get started once the Electricity Directive has been fully implemented, i.e. in 2007, and should be finalised by 2012.

In practice, integration at European level means the integration of regional markets, whether established by formal mechanisms (like the Nordic market) or developed naturally without any clear borders (like the Western European market), into one European market. To make this possible, it is extremely important to ensure ongoing coordination between markets as otherwise the formation of a pan-European market would become very difficult. If the developments described above take place in parallel in all markets, the integration of regional markets should, in principle, be quite straightforward. The key driver for the whole development will be the market forces, supported by a strong political will to create a European electricity market.

Continued harmonisation towards European integration combined with deepening inter-regional integration via investments in generation and transmission lines are at the core of this process. A European framework must be defined for the day-ahead, forward, intra-day and balancing markets with active demand-side participation and with the use of market-based congestion management.

Additional grid investments should be fostered based on common principles developed by the involved TSOs and regulators in order to reduce the remaining structural grid congestion between European regions. The goal is not to have a market without *any* congestion but to achieve the largest possible price area(s). Congestion should be removed as far as possible and where economically justified or for reasons of security of supply, as it could otherwise constitute a hindrance to the development of a European electricity market.

A common European transmission charging system can be introduced based on these common principles for network investments.

In addition, a harmonised framework for renewables with a market-based support scheme must be in place on a European level by 2012.

In the context of an integrated European wholesale market, security of supply issues also need to be co-ordinated on a European basis, including common requirements for planning and operation of infrastructure (e.g. operational reserve rules).

The pan-European wholesale electricity market should not be viewed as isolated from the neighbouring countries and ways should be explored to facilitate trade with those countries.

Developments and actions	Involved Parties
Establish a framework for day-ahead, forward, intra-day and balancing markets at a European level	Power Exchanges/ Market Participants/ Commission
Introduce a common transmission charging framework	Regulators/ TSOs
Foster new grid investments to reduce grid congestion between European regions if economically justified or for reasons of security of supply	TSOs/ Regulators / Market Participants
Implement common principles for network investment	Commission/ Regulators/ TSOs
Co-ordinate security of supply issues on a European basis, including planning and operational requirements (operational reserve rules)	Commission/ Governments/ Regulators/ TSOs
Ensure that a European market-based system for renewables is in place	Commission/ Governments

4.6. Conclusion

The development of a pan-European market is an ongoing process. The road map presented in this chapter shows the EURELECTRIC vision of the necessary processes towards this ultimate goal at this point in time based on the current status of liberalisation and wholesale markets. In setting out an electricity industry approach to the development of a pan-European wholesale market, the road map seeks to emphasise the role that market participants should play in achieving it.

It can be seen that no single approach can be applied for all markets. However, although national and regional markets will have their own specificities, these specificities should not impede progress towards the ultimate goal of a pan-European market, which must be the focus of all such developments.

We believe that following this roadmap can deliver the targets set for the liberalisation of the European electricity markets. Competition will increase by enlarging the geographical markets, thereby increasing the number of active market participants, with active cross-border trade and market-based investments in power generation. All customers will have more options to choose their supplier.

In particular, we invite large consumers to participate further and directly in the wholesale markets.

The road map shows that no further regulation is needed to achieve the goal set out in the liberalisation package provided that markets are well designed and the market participants are left to make the markets work. The overall improved efficiency of the electricity industry will bring benefits for all domestic and industrial customers in the European Union.

Further market integration will succeed if it is backed by a clear and solid vision, and by a firm commitment from the stakeholders. This road map is intended to demonstrate EURELECTRIC's faith in the liberalisation process and confirm our commitment to making the original objective of a single electricity market come to fruition. We hope that it will serve to stimulate discussion and debate on the challenges facing the electricity sector and European industry in general.

Data used

Electricity demand The total electricity demand includes the demand for final consumption and network losses. Source of 2002 and 2003 data for “electricity demand” in country tables: <http://www.eurelectric.org/statistics/Latest2003.htm>, Table 1: Electricity Overview 2002/2003 (downloaded on 11 May 2005); the data for 2004 are preliminary figures and will be published on the EURELECTRIC website as soon as they are final. More detailed information can be found in the EURPROG 2004 report published by EURELECTRIC.

The data used for the pie charts on the market shares of the biggest electricity companies of the regions was taken from the publication “Quarterly Review of European Electricity Prices”, Issue 1: October 2004, published by DG Energy and Transport (with a correction for “west central Europe” published in Issue 2: January 2005). See at http://europa.eu.int/comm/energy/electricity/publications/index_en.htm.

The data comes either from public sources (e.g. websites of power exchanges, EURELECTRIC reports, etc) or was provided by the members of the Task Force. The data provided by EURELECTRIC members does not include any commercially sensitive data.

Abbreviations used for legal acts in report

- 1996 (IEM) Directive Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 concerning common rules for the internal market in electricity, published in the Official Journal L 27/20 on 30 January 1997.
- 2003 (IEM) Directive Directive 2003/54/EC of the European Parliament and to the Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC, published in the Official Journal L 176/37 on 15 July 2003.
- Cross-border Regulation Regulation (EC) No 1228/2003 of the European Parliament and of the Council of 26 June 2003 on conditions for access to the network for cross-border exchanges in electricity, published in the Official Journal L 176/1 on 15 July 2003.

List of used abbreviations

APX	Amsterdam Power Exchange (NL)
Belpex	planned Belgian power exchange (project between Belgium, France and the Netherlands)
BPI	Belgian Power Index
CIS	Commonwealth of Independent States
D-3	Delivery day minus three days
DG TREN	Directorate-General for Energy and Transport
E&W	England & Wales
EEX	European Energy Exchange (DE)
Endex	European Energy Derivatives Exchange (NL)
EU	European Union
EXAA	Energy Exchange Austria (AT)
FYR	Former Yugoslavian Republic
IEM	Internal Electricity Market
IPE	International Petroleum Exchange (UK)
IPEX	Italian Power Exchange (IT)
MIBEL	Iberian Electricity Market
MVM	Owner of the transmission system and public wholesaler in Hungary
OMEL	(current) Spanish market operator
OMI	(future) Operator of the Iberian market
OMIE	Iberian market operator – Spanish branch
OMIP	(future) Iberian market operator – Portuguese branch
OTC	Over-the-counter
OTE	Czech electricity market operator
PPA	Power Purchase Agreement
SEE	South-East Europe
SWEP	Swiss Electricity Price Index (CH)
TSO	Transmission System Operator
UCTE	Union for the Co-ordination of Transmission of Electricity
UKPX	UK Power Exchange
UNMIK	United Nations Interim Administration for Kosovo



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