Competition in Liberalized European Electricity Markets

A new directive has introduced competition to the previously closed and tightly regulated European electricity markets. This creates major opportunities, as well as challenges, for both incumbents and new entrants.

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I. Too Cozy for Comfort

The title of an editorial in a recent issue of *The Economist*[1] sums up the situation in Europe: *too cozy for comfort.* The editorial, while pointing out a few encouraging signs of market liberalization, focused on the still formidable remaining barriers to free trade and competition. It mentioned the proposed *asset swaps*, which giant monopolies such as Electricite de France (EdF), ENEL, and Endesa are proposing to use instead of outright sale of assets. These half-measures clearly won't do—keeping a handful of powerful state-owned and private companies in a position to do a lot of mischief. *The Economist* identified three critical Ts for electricity market reform in Europe:

- Transmission,
- Trading, and
- Transparency.

To appreciate the rapid changes now talking place on the European continent, one must first examine how things were until recently. The European electricity market, with annual revenues exceeding $250 billion, has long been a collection of individual markets, closed, tightly regulated, and dominated by a handful of giant state-owned players such as EdF and ENEL. Cross-border trade used to be heavily controlled through artificial tariffs, arbitrary transmission pricing, and a host of other restrictions. Prices were determined primarily through regulatory fiat, as opposed to market conditions. State-owned, privately held, and municipal utili-

 PII S1040-6190(01)00178-6

ties used to co-exist incongruently, maintained by rigid regulations. Powerful labor unions used to dictate what fuels were used in power generation, even if market conditions suggested otherwise.

II. European Union Directive to Change the Status Quo

In February 1999, changes began—gradually in some countries, radically in others. A European Union (EU) directive[2] set the wheels of change in motion and, as a result, European electricity markets are not what they used to be. Nor are they anywhere near equilibrium. But the changes already taking place are truly amazing, and provide useful clues about what more may follow. **Table 1** provides relevant country-specific statistics.

This article provides an overview of the major developments taking place in Europe as a result of the introduction of the directive, which will gradually push the level of competition to smaller and smaller customers, until eventually all customers will have the option to choose their electricity supplier. The implementation pace varies from country to country, as shown in **Table 2**.

More importantly, the EU directive has, at least in principle, opened the European transmission grid to third parties under nondiscriminatory and transparent prices. Until now, this has been a major stumbling block, severely restricting cross-border trade among neighboring countries. In practice, it will take a few years for these so-called *trans-boundary tariffs* to be harmonized across a new pan-European network. And it will take even more time for a new integrated European market to emerge. But that is the ultimate goal of the policymakers in Brussels.

III. Change Brings Opportunities and Risks for Existing and New Players

As with all EU directives, the implementation as well as enforcement of the electricity law is left to individual countries. Not surprisingly, this means uneven implementation and different timetables. In some countries, notably **Germany**, competition has been fierce and widespread, despite many remaining hurdles such as the interpretation of the *third-party access* (TPA) rules.

The EU directive has opened the European transmission grid to third parties under nondiscriminatory and transparent prices.

In other countries, notably **France** and **Italy**, the effect of market liberalization has been minimal thus far. But even Italy and France have made significant concessions and are moving forward, however slowly.

These developments are truly amazing. Take the case of EdF, long opposed to even talk of competition in its domestic market. The giant, state-owned enterprise now appears to have embraced competition—abroad and even within France. Its new boss, Francois Roussely, is gradually convincing his 115,000 employees that they stand to gain more than lose from competition. It has been a hard sell, but Mr. Roussely is determined to change the EdF mindset. EdF's competitors are not impressed. They point out that the company still enjoys a strong position at its home base that will take a long time and a lot of effort to overcome. In the meantime, Mr. Roussely has set a goal to earn half EdF's revenues from activities *other than* the sale of electricity in France by 2005. The corresponding figure in 1999 was 18 percent on revenues of $34 billion. For Mr. Roussely to succeed, EDF will have to expand exponentially outside France in the next few years.

Several countries have one- to two-year extensions before opening their markets. **Ireland** and **Greece**, for example, have been granted temporary extensions before opening their markets. Since neither country is physically linked to continental Europe, this is not seen as a major problem for now.

The EU directive, which is in reality a carefully worded political compromise, allows plenty of flexibility and, one might add, a lot of room for interpretation. Member countries have to abide by the spirit of the law, not necessarily its letter. They can choose how they restructure their domestic market,

  PII S1040-6190(01)00178-6

Table 1: Who's Who in Today's Europe—Key Statistics of European Union Member Countries

	Population (million)	GDP (billion 1990 US$)	Area (km^2)	Energy Prod. (Mtoe)	Net Imports (Mtoe)	TPES[a] (Mtoe)	Electricity Generation (TWh)	Electricity Consumption[b] (TWh)	Electricity Consumption/ Population (kWh/capita)	CO_2 Emissions[c] (Mt of CO_2)	CO_2/ Population (t CO_2/capita)
Austria	8.07	183.27	83,858	8.01	19.26	27.76	56.85	52.9	6553	64.05	7.94
Belgium	10.18	218.25	30,528	13.15	48.87	57.12	78.89	78.43	7703	122.58	12.04
Denmark	5.28	160.69	43,094	20.27	3.71	21.11	44.29	34.99	6623	62.4	11.81
Finland	5.14	143.99	338,145	15.06	18.93	33.07	69.18	74.3	14454	64.11	12.47
France	58.6	1307.35	543,965	127.84	123.1	247.53	503.76	409.76	6992	362.9	6.19
Germany	82.05	1833.12	356,974	139.73	210.19	347.27	551.54	527.3	6426	883.99	10.77
Greece	10.49	93.17	131,957	9.65	19.48	25.56	43.51	41.98	4003	80.62	7.69
Ireland	3.66	73.4	70,283	2.87	9.71	12.49	19.96	18.29	5002	37.55	10.27
Italy	57.52	181.92	301,302	29.31	135.37	163.32	250.77	272.58	4739	424.33	7.38
Luxembourg	0.42	14.41	2,586	0.04	3.34	3.39	1.26	6.35	15045	8.62	20.42
Netherlands	15.61	336.46	41,864	65.3	23.18	74.91	86.66	95.56	6122	184.31	11.81
Norway[d]	4.41	150.96	323,877	212.65	−187.52	24.23	111.66	107.03	24296	34.34	7.79
Portugal	9.95	80.68	92,082	2.32	18.82	20.4	34.19	33.82	3401	51.96	5.22
Spain	39.32	557.57	504,782	31.36	81.04	107.33	186.61	166.84	4243	253.82	6.45
Sweden	8.85	242.39	449,964	33.07	20.37	51.93	149.45	135.76	15348	52.92	5.98
Switzerland[d]	7.11	231.53	41,283	10.99	15.03	26.22	66.7	52.25	7347	44.75	6.29
United Kingdom	59.01	1100.51	242,429	268.99	−35.44	227.98	345.34	336.59	5704	554.7	9.4

Source: *International Energy Agency Statistics*, Institute of Energy Economics, Vienna University of Technology, 1999.

[a] Total primary energy supply.

[b] Gross production + imports − exports − transmission losses.

[c] CO_2 emissions from fuel combustion only.

[d] Norway and Switzerland are non-European Union Members.

Table 2: Timetable for Implementation of the European Union Directive

Country	Eligible Customers	Market Opening (%)
Austria	>40 GWh + distributors	27 (100% in 2001)
Belgium	>100 GWh	35 (100% in 2010)
Denmark	>10 GWh + distributors	90 (100% in 2002)
Finland	all	100
France	>20 GWh (16 GWh)	30 (34% in 2003)
Germany	all + distributors	100
Greece	>100 GWh + others TBA	>26
Ireland	>4 GWh	28 (32% in 2003)
Italy	>20 GWh	35 (40% in 2002)
Luxembourg	>100 GWh	45
Netherlands	2 MW/20 GWh + distributors for eligible customers	33 (100% in 2007)
Portugal	>9 GWh + distrib. for 8% of volume	34
Spain	> 1 GWh	42 (100% in 2007)
Sweden	all	100
United Kingdom	all	100

Source: Institute of Energy Economics, *Power in Europe*, Issue 322, April 14, 2000, at 8.

how fast they open to competition, and what specific competitive structure they implement. **Table 3** shows the various competitive models that are being implemented in EU member countries.

In the meantime, **England and Wales** and the **Nordic countries** already have some of the most liberal and transparent energy markets, far ahead of the rest of Europe. All they have to do to comply with the EU directive is to address a few remaining transboundary tariff issues. The energy supply business in England and Wales has been open to competition for some time, and includes both electricity and natural gas. Britain, in fact, is on the verge of a second phase of competition with the introduction of the *new electricity trading arrangements* (NETA). NETA is expected to address many of the shortcomings of the original Pool. Its introduction, which was originally planned for November 2000, has been delayed to 2001. **Spain** and **Austria** have recently embarked on an accelerated timeframe to introduce full competition ahead of their original plans.

Some countries require strict unbundling among generators, distributors, and competing suppliers (e.g., England and Wales), while others are content with *virtual* unbundling (e.g., France). Critics contend that virtual unbundling will not work, allowing the dominant players plenty of opportunities for subtle cross-subsidization and other forms of mischief. This is a thorny issue, yet to be addressed by the regulators in Brussels.

Another decisive issue, not fully resolved, is the question of ownership and control of the transmission grid operators. Critics charge that strict functional separation and independence of the grid operator is essential for any well-functioning electricity market. Others argue that safeguards can be placed to minimize mischief or discrimination. The final outcome is likely to be a political compromise, as is likely with the issue of ownership of the grid. **Table 4** shows the requirements for unbundling, ownership, and operations of the transmission grids in different countries.

This dichotomy between fully liberalized and closed markets, between privately and state-owned

Table 3: The Choice of Competitive Model and Transmission Access Options in European Union Countries as of October 2000

Country	Grid Access
Austria	rTPA
Belgium	rTPA
Denmark	rTPA
Finland	rTPA
France	rTPA
Germany	nTPA/SB
Greece	nTPA
Ireland	rTPA
Italy	SB/rTPA
Luxembourg	rTPA
Netherlands	rTPA
Portugal	SB/rTPA
Spain	rTPA
Sweden	rTPA
United Kingdom	rTPA

Note: rTPA = regulated third party access; nTPA = negotiated third party access, SB = Single buyer competitive model.

Source: Institute of Energy Economics, *Power in Europe*, Issue 322, April 14, 2000, at 8.

  PII S1040-6190(01)00178-6

Table 4: Types of Unbundling and Transmission System Operator in European Union Countries

Country	Type of unbundling[a]	Transmission System Operator[b]
Austria	SA	MM
Belgium	SA	OO (Electrabel)
Denmark	SC	MO[c]
England and Wales	SC	OO (NGC)
Finland	SC	OO (Fingrid)
France	SA	OO (EdF)
Germany	SA	MM
Greece	SA	OO
Ireland	SA	OO
Italy	SA	MO (ENEL)
Netherlands	SA	MO (TenneT)
Norway	SC	MO (Statnett)
Portugal	SA	MO
Spain	SOU	OO (REE)
Sweden	SOU	OO (Svenska Kraftnät)

Source: Compiled by Menlo Energy Economics and the Institute of Energy Economics, 2000.

[a] SA = Separate accounting for generation, transmission, and distribution; SC = separate companies for generation, transmission, and distribution, SOU = separate operating units for generation, transmission, and distribution.

[b] MM = Mixed ownership and operation of the main grid; MO = mixed ownership and one operator of the main grid; OO = one owner and operator of the main grid.

[c] Denmark has two different system operators for two separated geographic regions.

enterprises, and between regulated and negotiated tariffs creates an unstable situation. Most observers believe that the *status quo* is not sustainable, and that the barriers to competition will begin to fall gradually. It is hard to imagine that vastly different rules and systems can survive in the long run with increased trade and integration across Europe. But differences are likely to persist for some time.

Another interesting European phenomenon is the creation of a number of new and as yet untested regulatory authorities in various countries (**Table 5**). In countries like England and Wales, the role of the regulator is well-established, its independence well-accepted, and its influence rather strong. This is not necessarily the case in many other countries which have instituted regulatory bodies in the recent past. How fast these regulatory bodies establish themselves and how well they will carry out their mandates is a big unknown.

In some cases, the legal authority of the new regulator is poorly defined, and its independence from the industry it is supposed to regulate, unclear. In most cases, the new institutions are understaffed and ill-prepared to take on the well-established companies they are supposed to control. This is likely to change, as the next couple of years will demonstrate who's who among the European regulatory agencies. In the case of Germany, for example, there is no overall regulator: The industry is supposed to self-regulate. Transmission access prices are to be negotiated among parties; retail prices are to be set by supply and demand conditions, safeguarded by competitive forces. There is only an anti-cartel office. Disputes among the parties are to be taken to the anti-cartel office—or, increasingly, to the courts.

IV. Competition at Work

Competition has already exposed the incumbent players to intense pressures to reduce costs, re-examine their strategies, re-assess their new role in the new markets, and look beyond national borders for opportunities. Cross-border mergers, strategic alliances, and investments have accelerated considerably in the past two years, and show no sign of abating any time soon.

The initial effect of competition has been a surge of mergers, acquisitions, and strategic alliances which, if allowed to continue unabated, may lead to a handful of dominant and potentially mischievous oligopolies. As shown in **Figure 1**, this tendency is most pronounced among Europe's top generators, who continue to get bigger. For example, the proposed merger of Endesa and Iberdrola would have created a more powerful national player with ambitions which extend beyond Spain. It was nixed.

Granted, size is not the only factor that determines success in competi-

PII S1040-6190(01)00178-6

Table 5: Regulatory Bodies in European Union Countries

Country	Regulator
Austria	Elektrizitäts-Control GmbH & Kommission (scheduled but not installed yet)
Belgium	Committee of Control for Electricity and Gas (CCEG)
Denmark	Energy Supervisory Board (Energitilsynet)
European Parliament	Energy Commissioner, Loyola de Palacio
Finland	Electricity Market Authority (EMA)
France	(CRE) Commission de Regulation de l'Electricite (Jean S. Rota)
	Reseaude Transport Electrique (grid operator)
Germany	Federal Central Office (FCO), Ulf Boege
Greece	Electricity Regulatory Authority (scheduled but not installed yet)
Ireland	Commission for El. Regulation (CER)
Italy	L'Autorita per l'energia elettricae il gas (Pippo Ranci)
Luxembourg	Régulateur des Télécom (l'Institut luxembourgeois des télécommunications) is also the electricity regulator
Netherlands	(DTE) Dutch Electricity Regulator, Jacques de Jong
Norway[a]	(NVE) Norwegian Water Resources & Energy Directorate
Portugal	Entidade Reguladora do Sector Electrico (ERSE)
Spain	(CNE) National Energy Commission (Pedro Merono)
Sweden	Swedish National Energy Administration
United Kingdom	Office of gas and electricity markets (OFGEM), Callum McCarthy

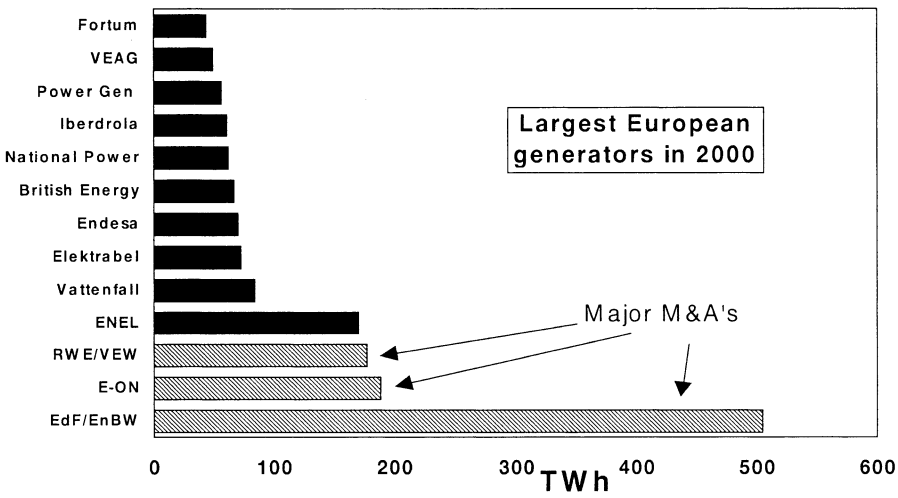
Source: Compiled by Menlo Energy Economics and the Institute of Energy Economics, 2000.
[a] Non-European Union member.

tive markets, but it helps in many cases. There are, however, a few encouraging signs. The expected downsizing of ENEL by forcing it to sell some 50 percent of its generating assets is a good sign. Elettrogen, the first of the three companies to be auctioned by ENEL, will have 5,438 MW of capacity, enough to stand on its own feet. Two other auctions are to follow, eventually cutting ENEL's market share in generation to below 50 percent. But even here, there are many disputes within Italy and in Europe about who can and cannot buy these assets. Some Italian politicians, for example, have made it clear that they do not wish to have EdF as a bidder, arguing that in this case one state-owned monopoly will replace another. But it is not clear if EdF affiliates, or a joint bid involving EdF may prove acceptable.

The current merger phenomenon, however, is not limited to generators, as shown in **Table 6**. Many of the smaller, less efficient players are now looking for partners or allies to compete with their big rivals who enjoy significant economies of scale and/or scope. The pace of change is likely to be fast for the foreseeable future. The trend towards multi-utilities (e.g., electricity, gas, water, combined heat and power, district heating, waste disposal, telecommunications, environmental services, consulting, etc.) is well under way. A number of mega-utilities with operations and assets crossing national boundaries is now emerging. A handful of companies are vying to be in the top-tier category, while many of the smaller companies are forming alliances merely to survive.

V. More Questions than Answers

At this junction in the evolution of the European electricity market, there are more questions than



Source: Compiled by the Institute of Energy Economics from different sources, 2000.

Figure 1: Largest Generators in Europe in 2000

  PII S1040-6190(01)00178-6

Table 6: Recent Mergers and Acquisitions in Europe

Acquiring Company	Acquired Company	Share (%)
Southern Company, Bayernwerke, Preussen Elektra	BEWAG	50.90
EdF	London Electricity	100
EdF	SWEB generation, supply (via London Electricity)	100
EdF	ESTAG	25 + 1vote
EdF	EnBW	25 + 1vote
Vattenfall (via Vasa Energy)	Stadtwerke Rostock	12.55
Vattenfall (S)	HEW (D)	25
Texas Utilities	Eastern	100
ScottishPower	Manweb	100
ScottishPower/PacifiCorp	ScottishPower, PacifiCorp	Merger
National Power	Midlands Electricity	100
PowerGen	East Midlands Electricity	100
Preussen Elektra (DE)	EZH (NL)	25
Scottish Hydro Electric	Southern Electric	100
Versteegh Family, EdF, Preussen Elektra, Sydkraft	Graninge	100
PNEM-MEGA	PNEM/MEGA Limburg	Merger
EnBW (D)	EVS/Badenwerk	Merger
BirkaEnergi (SE)	Stockholm Energi/Gullspang	Merger
?	PNEM-MEGA/EDON (NL)	Pending
Electrabel (BE)	EPON (NL)	40
E-ON	Preussen Elektra/Bayernwerk	Merger
RWE	VEW	100 (pending)
Union Fenosa	Hidrocantabrico	

Source: Compiled by the Institute of Energy Economics from various sources, 2000.

there are answers. Among the key questions is who will be among the winners and who are likely to be among the losers as restrictive tariffs and rigid price controls are lifted across Europe. There is obviously a lot at stake. Other critical questions include the following.

A. Will all customers gain as competition forces prices down, or will some gain at the expense of others?

The initial indications are that industrial customers tend to do well, as they can fend for themselves. Their sophistication and buying power allows them to pit one supplier against others, enabling them to get good deals. Big customers can also afford good advice from experts, if needed, to negotiate the best form of contracts and risk exposure that fits their needs. Smaller customers have neither the clout nor resources to do so—unless they can aggregate their loads. New enterprises are now forming to provide such a service for smaller customers, using the Internet as the medium of communication. Successful examples already exist in Germany and the U.K.

B. Will the recent dramatic price declines in countries such as Germany be sustainable, or will prices gradually rise, perhaps beyond historical levels, once consolidation takes place and the current excess capacity is gone?

Following the opening of the German market to competition, prices fell dramatically. As usually happens, price was the only attribute everyone focused on at first. Given significant excess generation capacity in the market, and the fact that prices had been artificially high, there was a free-fall in prices, noticeably to strategic industrial customers. As generators and marketers were fighting for new customers, profits took a nosedive. In many cases, wholesale prices fell below marginal generation costs. Many in the industry were in a state of panic, as they saw no way to get out of the rut.

Now, there are signs that the first phase of competition—ruinous price wars—may be over. Beginning last summer, wholesale prices firmed up and began to rise, for example, in the forward markets (**Figure 2**). More recently, retail prices appear to be firming as well. As of this writing at the beginning of 2001, wholesale prices were higher than retail prices in some cases, a situation which cannot last for long. Most industry observers believe that this is the dawn of the second, and more mature, phase of competition, where price is no longer the only factor.

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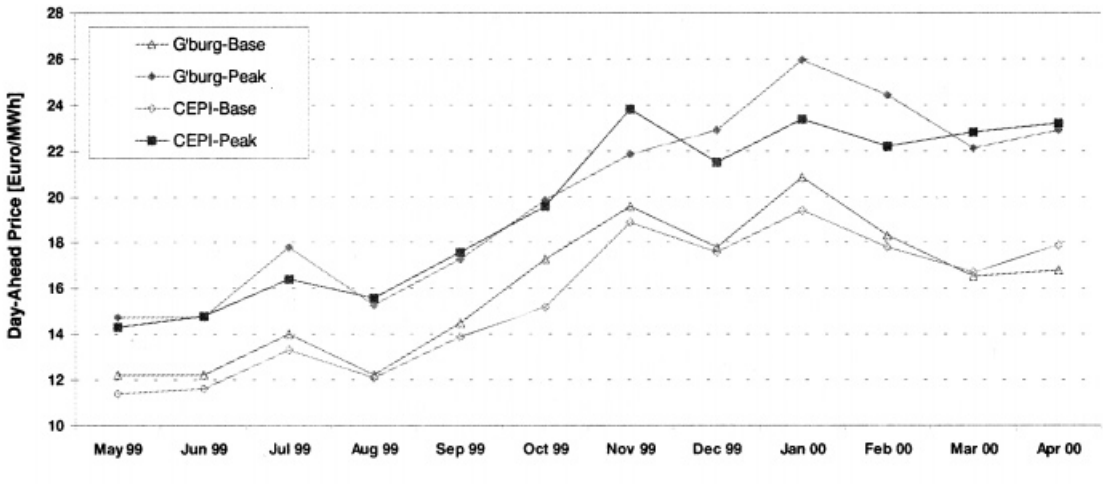

Source: Menlo Energy Economics and Institute of Energy Economics, *Competition in the Liberalized European Electricity Market*, 2000.

Figure 2: Forward Contracts for Wholesale Prices in Germany Are on the Rise

The main explanation, sometimes referred to as *rationalization,* goes as follows. After losing lots of money and not gaining much market share, market participants come to the realization that price cutting will only benefit consumers. The participants at this stage come to focus on other attributes of service, and begin offering more sophisticated products and services, some with decent profit margins. Moreover, the players learn what they can and cannot do, who the other players are, and how likely they are to respond to given strategies. An uncomfortable truce prevails. Prices firm up and become sustainable. Real competition begins.

C. What about the status of giant state-owned enterprises such as Electricite de France and ENEL?

The status of the former is a major question mark. This is troubling, particularly because French laws are rather lax with regard to unbundling, leaving EdF a strong position. The latter is being cut to size—at least with respect to its dominance in generation. Other powerful state-owned enterprises with aggressive postures include Vattenfall in Sweden and others across Europe.

D. Will the current pace of mergers and cross-border acquisitions accelerate, or will the anti-cartel authorities in Brussels or EU member countries clamp down?

Up to now, European regulators have taken an ambivalent attitude towards mergers, generally permitting them to proceed, and only extracting small concessions when it has been absolutely necessary to do so. But as the size and scale of proposed mergers increases, the regulators are likely to become more involved. Moreover, as the regulatory agencies gain in confidence and establish their authority, they are likely to take a closer look at the potential anti-competitive aspects of future mergers.

E. How many (and which) of the new European electricity exchanges will thrive/survive?

There are a handful of successful electronic exchanges, notably in the United Kingdom, the Nordic countries, the Netherlands, Germany, and Switzerland. Most are regional or national in scope. What they lack the most is volume, liquidity, and geographical diversity. With cross-country electricity trade becoming commonplace, there is room for tremendous growth. But there is no room for too many competing players in a harmonized European market. This means consolidation among the existing exchanges. It is too early to tell who the winners are going to be, but all the major players are hoping to be among the survivors.

F. How will the current attempts to apply e-commerce pan out, and will they have a significant impact on the electricity supply industry?

Current e-commerce developments in the European power sec-

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tor, like those in North America, are primarily focused on a handful of cost-saving applications. As previously described in *The Electricity Journal*,[3] the current applications fall into six broad categories:

- Wholesale electricity trading and electronic exchanges,
- Supply procurement,
- Competitive energy retailing and energy services,
- Electronic bill presentment and payment and customer relations management,
- Demand-side aggregation and bidding, and
- Home automation—smart appliances.

These applications are likely to grow in both sophistication and significance over the next few years. Europe is already high on the list of who's who in electronic exchanges, as shown in **Table 7**.

G. What are the opportunities and threats in trans-Atlantic investments?

Until recently, it was mostly U.S. utilities that were investing overseas. They continue to do so, as exemplified by companies such as AES, Edison Mission Energy, TXU, Enron, Southern Company and others. But now the traffic is two-way, as big European firms start to invest in the Americas and elsewhere in increasing numbers. British companies were among the first to invade the United States, but other European companies will increasingly do so. The energy business, like everything else, is a global business, and money flows to where the best returns are.

Table 7: Who's Who in Electronic Trading

- Altra Energy: real time energy auctions
- Altranet: marketplace for liquid fuels; natural gas and electric power
- APX (Automated Power Exchange): forward market for trading electricity and related products
- BuyEnergyHere: European-based market for industrial and commercial energy users
- Buyingpower: electricity demand aggregation service for U.K.-based small and medium-sized enterprises
- ChooseEnergy.com: marketplace for electricity, gas, and fuels
- Energycentric.com: electric and natural gas marketplace
- EnergyPortal.com: e-portal dedicated to the energy industry
- Enermetrix: energy auctions
- HoustonStreet: electricity exchange
- Ienex: Brazil-based energy marketplace
- Nodocero: energy trading in Latin America
- Pantellos: marketplace and supply chain solutions for energy industry
- PowerOnline: information source for power industry
- Powernet: U.K.-based vertical portal
- UKPX: (U.K. Power Exchange) web-enabled electricity market
- YOUtilities: energy management exchange

Source: EEnergy Informer, Dec. 2000, adopted from *Financial Times*, Oct. 18, 2000.

H. What is likely to happen to the multitude of small players in countries like Germany, Austria, Switzerland, Norway, Sweden, and elsewhere who currently lack the economies of scale and the management skills necessary to compete with the truly big players?

With the arrival of competition, size becomes important. Not only because it gives more clout in financial markets, better bargaining power, and so on, but because it allows fixed costs to be spread among large numbers of customers. In areas such as information technology, where significant investments are necessary, spreading costs becomes critical. The same is true of many other fixed costs associated with maintaining a vast distribution network. Another important factor is the ability to attract and retain top managerial and technical talent, where smaller firms have a distinct disadvantage. For all these reasons, many of the smaller distributors are unlikely to remain viable in their present form. Several studies have predicted rapidly dwindling numbers among the small players.

I. Can non-EU members such as Switzerland or countries in Eastern Europe afford to sit on the sidelines, or will they be drawn into the EU regardless of their membership status?

In the case of Switzerland, the answer is already clear. Sitting at a strategic crossroads among Italy, France, Germany, and Austria, Switzerland is already an active player in the European electricity markets, notwithstanding its non-EU status. Former eastern bloc countries such as Poland and the Czech republic are increasingly drawn into the Western European markets.

I. How will concerns about the environment, renewable energy, energy efficiency, and other social issues be addressed in the liberalized market?

European greens are a powerful political lobby, and European

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countries are more committed to meeting the Kyoto Protocols than the United States. At the same time, Germany and Sweden are attempting to reduce their reliance on nuclear energy. This is likely to ratchet up the pressure to increase reliance on renewable energy, which is still expensive.

VI. Markets in Turmoil

There are no crystal balls, but the following lists the major trends and developments which are likely during the evolution of the European markets in the years ahead.

A. Market Evolution

- **Diversity.** As much as the bureaucrats in Brussels like to talk about one borderless, harmonized market spanning all of the EU, the reality may be different. The European electricity supply industry will continue to be characterized by diversity rather than uniformity, at least for some time. Some markets will liberalize faster than others, but national differences will remain.
- **Change.** The developments already taking place in the United Kingdom, the Nordic countries, and Germany suggest what may be in store for other countries as they introduce competition to electricity markets.
- **More pain.** Liberalization will introduce new risks for the incumbents as well as new opportunities for both the newcomers and the incumbents. There will be ample opportunities to lose out in the new environment, with no regulatory safety net to fall into. In the future, successful players will increasingly have to earn it.
- **More risks.** Liberalized markets introduce new risks, which the players must learn to manage—financial, regulatory, and political.

B. Market Changes

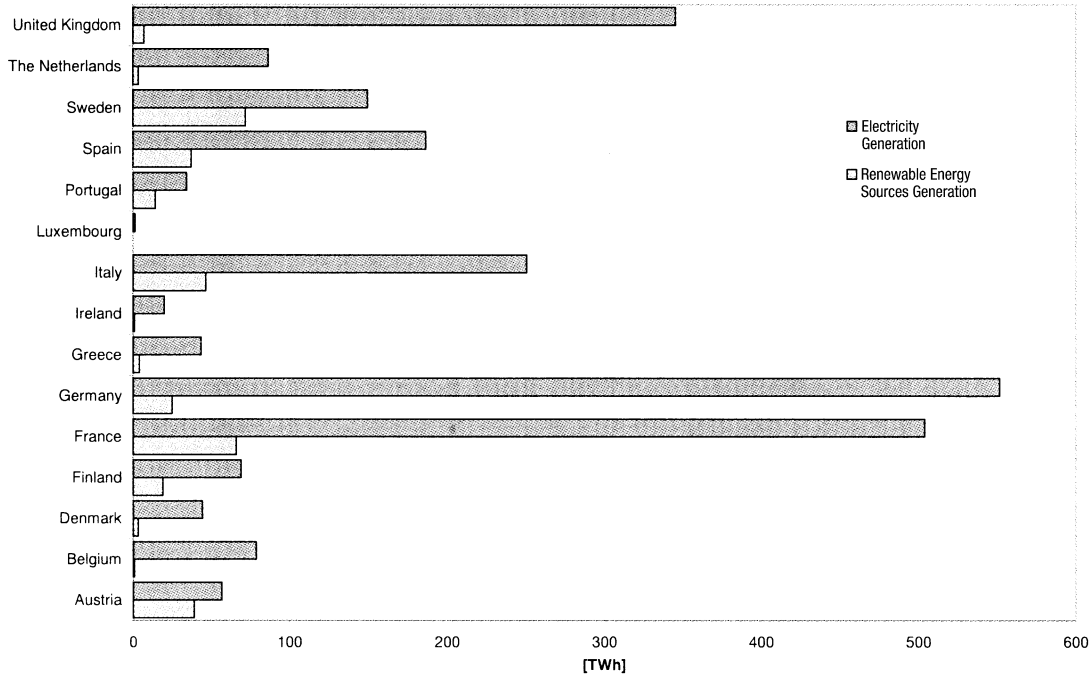
- **Falling prices.** Market liberalization is initially accompanied by falling prices, especially when there is excess capacity. Price volatility, however, usually follows. It is not clear if and when prices will increase again. Some suspect this process is already under way, as exemplified by a recent firming of prices in Germany.
- **Transparency.** Prices will become increasingly transparent, facilitated by the removal of trade obstacles and pan-European electronic exchanges. Even the very large players will have a hard time manipulating prices as long as excess capacity exists. However, big mergers combined with the gradual removal of the excess capacity may provide opportunities for strategic gaming. In Germany, both of these trends are already taking place.
- **Consolidation and convergence.** Competition will force further consolidation as well as service convergence. These trends are already visible across the EU, as exemplified by the emergence of the super-generators shown in Figure 2.
- **Business fragmentation.** With or without functional unbundling, the electricity business will become fragmented into four distinct lines with companies specializing in each—or possibly all: generation, trading, delivery, and supply.
- **Economies of scale.** The larger players will enjoy significant advantages over their smaller rivals, all else being equal.
- **Low margins.** The incessant pressure on prices will produce low margins, notably in competitive supply. This will force successful players to capture both economies of scale (through mergers and acquisitions) and scope (through cross-selling).
- **Power trading.** Power trading (or marketing) is likely to evolve into a specialty business, requiring specialized skills and assets, with high risks and high rewards.

Table 8: A Lot More to Come from Renewables if the European Commission Has Its Way—Goals for Electricity from Renewable Energy Sources by 2010

	Percent of Electricity from Renewables		
	1997 Actual	2010 Target	% Increase
Austria	72.7	78.1	7
Sweden	49.1	60.0	22
Portugal	38.5	45.6	18
Finland	24.7	35.0	42
Spain	19.9	29.4	48
Italy	16.0	25.0	56
France	15.0	21.0	40
Denmark	8.7	29.0	233
Greece	8.6	20.1	134
Germany	4.5	12.5	178
Ireland	3.6	13.2	267
Netherlands	3.5	12.0	243
Luxembourg	2.1	5.7	171
United Kingdom	1.7	10.0	488
Belgium	1.1	6.0	445
Overall EU	13.9	22.1	58

Source: European Commission Directive, adopted May 10, 2000.

  PII S1040-6190(01)00178-6



Source: Institute of Energy Economics, Vienna, 2000.

Figure 3: Electricity Generation from Renewable Energy Sources versus Total Electricity Consumption in European Union Countries in 1998

• **E-commerce.** Initiatives to embrace the full power and potential of the Internet are likely to become significant over time.

C. Organization

• **Mergers and acquisitions.** There will continue to be intensive mergers, acquisitions, and alliances. The focus of these activities will shift from tactical to strategic.

• **Mega players, multi-utilities.** The market will continue to be dominated by a small number of very large, global players. The really big will increasingly be multi-utilities operating across countries and continents.

• **New economy, new management.** Management of utilities will become more complicated, requiring new skill sets and systems.

D. Wild cards

• **EdF.** The eventual status of Electricite de France remains a major source of speculation. In the absence of functional unbundling, EdF will retain a size that is likely to give it unfair advantage.

• **Nuclear.** Opposition to nuclear power in Europe is already strong in Sweden and Germany, and growing elsewhere. It could be a major swing issue, particularly as the EU tries to limit its greenhouse gas emissions.

• **Untested regulators.** Most EU countries have established new regulators to oversee the behavior and performance of the players. Many of these new institutions are feeble and untested. Many players do not yet know how far they can go before they get into trouble. How these newly established regulatory bodies evolve, interpret, and implement their charters will make a big difference.

• **Kyoto and renewables.** Both the EU and a number of member countries have set ambitious goals for reducing greenhouse gas emissions and increasing the contribution of renewables. A new EU mandate proposes to nearly double renewables' share by 2010 (**Table 8**). Meeting this renewable target will be a major technical as well as fiscal challenge (**Figure 3**). Will they be able to deliver—and at what cost? ■

Endnotes:

1. *The Economist,* Nov. 2000.

2. The full text of the EU directive is available online at http://europe.en.int/comm/energy/en/elec_single_market/indexen.html.

3. Fereidoon Sioshansi, E-commerce and the Energy Sector: The Pioneers May Not Get It Right; The Procrastinators Are Likely to Become History, ELEC. J., June 2000, at 42–49.

PII S1040-6190(01)00178-6