OPERATING ENVIRONMENT FOR DISTRIBUTION COMPANIES IN EUROPE
COMPETITIVENESS THROUGH BETTER REGULATION

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INTRODUCTION

One important new role of distribution companies is to facilitate and promote the functioning and the development of the internal market. The opening up of the markets to all non-domestic consumers from July 2004 and to all consumers in July 2007 requires a series of measures (procedures and methods) to be put in place in order to enable new operators, the drivers of competition, to enter the market and to supply the new eligible customers.

THE NEW ROLE OF DISTRIBUTION COMPANIES

The new role of distribution companies includes a strict implementation of the unbundling provisions in order to create a level playing field for all the market players. This implies not only the establishment of new structures in management, organisation and internal data exchange in integrated companies but also the introduction of new accounting procedures. Finally transparent, objective and non-discriminatory use-of-system tariffs are required.

In many cases electricity distribution is in transition from a being part of a larger integrated energy business, consisting of electricity transport and delivery to customers, to a much narrower regulated monopoly business, whose main activity will be the ownership and management of the asset base, but takes on the key role of facilitating the operation of the competitive supply market. This unbundling means a fundamental change and it is a challenging task for the companies to live up to the expectations.

THE REGULATORY FRAMEWORKS

The regulatory frameworks and the role of the authorities involved in this field vary largely from country to country. In general, the economics, energy or industry ministries still occupy a central role in energy policy. However, the sector-specific regulatory authorities have become important actors throughout Europe in ensuring network access and approving network tariffs. Their competencies vary significantly within the EU member states, due to their resources and regulatory practices. A new facet in the activities of the regulators is technical side of the various parts of the process.

In a survey conducted in EURELECTRIC, members of the Working Group Distribution Issues were asked to provide information on the “Operating Environment for Distribution Companies” and to note the main aspects of their experience with regulation. As different countries are at different stages of liberalisation and have different regulatory structures and objectives, it is difficult to make direct comparisons between regulatory practices. However, there were a number of common topics apparent from the comments received.

A report published by EURELECTRIC on “Business Trends in the European Power Industry - The Financial Situation of Distribution Business” clearly shows the fact that for a significant number of pure distribution players in Europe, despite being fully regulated and, consequently, less risky, returns are not sufficient to cover their costs of capital.

There are other reports recently published by EURELECTRIC and related to the subject of this report. The first one on “Regulatory Models in a Liberalised European Electricity Market” takes a closer look into the existing regulatory models in Europe, to see what the main differences and converging points are, and to identify good practices. The second report on “Power Quality in European Electricity Supply Networks” presents an overview of the present PQ situation in European electricity networks and includes technical aspects of the quality of the electricity supply. The third report on “Customer switching supplier in Europe” gives the high-level state of play of the current customer switching systems in European countries. The report does not cover the trends in customer switching as such, but concentrates on the technical side of the various parts of the process.

Reflecting this situation, EURELECTRIC decided to collect information on the operating environment of European distribution companies. Comments, analysis, observations, conclusions and - as far as possible – an interpretation based on this data should create value for EURELECTRIC members as this can be used as one source in order to develop strategies how to cope with this new situation. This report is intended to be a summary of information about the operating environment and nature of the regulated distribution businesses in each member country.

As national Regulators co-operate more closely and share more data and ideas for regulating monopoly distribution businesses, so there needs to be greater understanding and sharing of experiences by the businesses.

MAIN PURPOSES OF THE EURELECTRIC REPORT

The main purposes of the EURELECTRIC Report on the “Operating Environment for Distribution Companies” are:

- To improve the understanding of the operating framework of electricity distribution companies
To describe the demographic and energy-related features that impact on energy consumption and network characteristics in each member country.

To provide information on the scope, characteristics and degree of separation of the identified distribution business.

To set out the changes in ownership and concentration of businesses in recent years.

To provide an overview of the different regulatory regimes, the different calculation methods and mechanism for reviewing and setting tariffs, the different costs included in the use-of-system-tariffs and the different signals sent into the market by regulators.

To provide a high-level understanding of the outputs the businesses are expected to deliver.

In order to achieve this aim data on the operating environment of distribution companies have been collected and summarized into tables and charts. This collection of data gives a first idea of what operating environment in the EU member states really means. In order to create more value for EURELECTRIC members, comments on the data, analysis of surveys have been added. Further, remarkable observations regarding the data are included. Finally there are conclusions drawn and some views and guidance on interpreting the data are also given.

Special attention was given to unveil interactions between obtained data and characteristic operating environment of the distribution system operator concerned. Examples are:

- Load density in the distribution area
- Structure of distribution area
- Regulatory conditions concerning CAPEX, OPEX or service quality

In compiling this document, the expectation is that business representatives can use it as a point of reference in carrying out comparisons between companies in a better-informed way. This may also prove beneficial in countering any inappropriate comparisons made by Regulators, and may of itself be an aid to sharing best practice and improving efficiency.

It is recognised that this document is not, in any way, a benchmarking study. Rather, it provides the context for understanding the similarities and differences between companies and their operating environments.

It is probable that review of the data by member company representatives will prompt a large number of questions, and lead to further collaborative work to generate better understanding.

**GENERAL INFORMATION**

In principle the participation of European countries – whether EU members or not – was open to everybody. The initial intention was to get at least data from member states of EU 15. Answers from the following countries have been given and included in this report: Austria, Belgium, Denmark, Finland, Germany, Ireland, Italy, Luxembourg, Netherlands, Poland, Portugal, Spain, Sweden, United Kingdom, Czech Republic, Hungary, Romania and Slovakia. In order to complete member states of EU 15 data from France and Greece are missing.

The following tables and figures are based on the answers received from the questionnaire. In general, the collected data relate to 2001 and 2002.

**Presentation of Data**

The focus of this Chapter is to describe the overall situation in which distribution companies are working. Some of the parameters describing the overall framework can be influenced by distribution companies others cannot. The impact of one single aspect may be different on one specific company compared to another. Finally there are parameters with a strong and a weak impact on distribution issues.

This section shows the diversity from country to country of two of the main factors that have an impact on the operating environment where the distribution companies are active: customer consumption and network characteristics. Such factors are analysed by means of a set of indicators, which give a picture of the mentioned diversity, and should be taken into consideration when dealing with other topics included in this report. The above is reflected in the following graphs.
Inevitably the number of connected electricity customers closely mirrors the population by country (Figure 1).

Energy and Electricity Consumption (Figure 2 to Figure 4) Overall energy consumption per capita and the share of electricity in total energy consumption is highest in the Northern and Western European countries with the Nordic countries being the highest consumers.

Network Characteristics (Figure 5 and Figure 6) The countries with the largest number of customers per km line are Hungary, UK and the Czech Republic. Those with the least are the Nordic countries. When considering LV customers per km of LV line, the UK stands out with over twice the average. Interestingly, line density (km line per km2) is highest in the Netherlands and Belgium, closely related to inhabitant density but also reflecting the level of interconnection and circuit duplication.

The ratio of MV and HV line/customers to LV line/customers is intended to give some insight to the design of the networks and the relative levels of the business and domestic communities. However, it should be recognised that the large majority of small businesses will be connected at LV and largely indistinguishable from domestic customers.

The figures show that Austria, Luxembourg, Portugal, Spain, UK, Czech Republic, and Slovak Republic have the largest LV customers (relative to their MV+HV), with Hungary having the smallest.

Possible Explanations Consumption is clearly related to climate, relative energy prices and general prosperity of the country. The higher share of electricity in Norway, Finland and Sweden in relation to Total Energy Consumption, and the higher consumption per capita (per customer) could be explained by an extensive use of electricity in energy intensive industries (pulp and paper, iron and steel, etc.) and for space heating. This widespread use is based on low-cost production in hydro, particularly in Norway, and nuclear power stations. Countries with a low inhabitant density have also a low line density. The reversal is also true. The countries with the highest inhabitant density have the highest line density.

The number of customers per km of line reflects both the population density and characteristics of the network design. The Netherlands and Belgium seem to have an excessively high line density. The explanation for this is that the HV network connects the power stations with each other. Because of the networks fine mesh, its advanced system of safety facilities and the connections with power plants the security of supply is very high in the Netherlands and Belgium. In comparison with other countries the density of the people and the industry is higher, so there is a need to more electricity lines and cables per square metre.

There is huge diversity from country to country in the magnitude of absolute figures, different ratios and indicators. It follows that great care needs to be taken when reviewing the tariffs and capital expenditure requirements in different countries to make valid comparisons.
GENERAL REGULATORY ENVIRONMENT

This section on the general regulatory environment is intended to give brief details on the scope and key features of the distribution business in each country. Some of the features covered per country include:

- The degree of separation of network business from other activities and businesses
- The scope of activities within the network business
- Areas of competition, non regulated network business activities
- Separation of tariffs for use-of-system and electricity and means of charging

Concerning network business there are several stakeholders with a different focus.

Given the EU Directive on establishing the competitive supply market, it is not surprising that regulated DSOs are tending to have similar shape and scope of responsibilities. Common to all is the ownership and management of the network assets. The major differences seem to be in the degree of separation from the retail supply businesses, particularly in the areas of customer call centres, metering and billing.

In some countries, the aspects of meter-reading, billing and customer management remain with the distribution. In others, the retail supply business is the main point of contact for customers, with the distributor providing services for change of supplier and network fault management.

In general, the system operators have to install the appropriate meters as well as the procedures for recording, following up and registering incidents and drawing up statistics. Opening up to competition requires more precise metering of consumption, either in quasi-real time, or through estimation (load profile). The EU Directive does not specify the ownership or operation of metering businesses, which is governed by the principle of subsidiary. As a result there are different models operating in different EU countries. However, for reasons of independence, the metering of consumption can be carried out by an entity, which is independent from the supply and distribution business, with some exceptions such as in the UK where it is the responsibility of the supplier.

It is likely that unbundling will lead to a greater convergence of the scope and nature of the distribution businesses. One feature which may continue to be a major influence on the scope of activities and operating environment is the ownership of assets, and the degree to which there is local regional or national control of the company structure and strategy. This could affect the revenue regulation and needs further investigations.

In particular, there is wide variation between countries in the degree to which regulators are allowing or promoting competition in activities such as metering, provision of new connections and, even, ownership of embedded networks.

LOSSES

Losses in an electrical grid are in general calculated by taking the difference of the energy measured by input meters and the energy measured by consumption meters. Due to this some conclusions are possible:

- There are inaccuracies in the result when data collection time of input meters differs from data collection time of consumption meters
- Own consumption of technical installations that are metered becomes part of the OPEX
- Theft of electricity becomes part of losses

In order to compensate losses by an equivalent amount of energy bought from the electricity market the above mentioned loss energy has to be transformed into a load profile (on an hourly or a quarter-hour basis).

Depending on the amount of losses there may be incentives in the regulatory model with the aim to reduce losses.

![Network Losses](image)

The values for losses indicated in Figure 7 include both distribution and transmission losses. It can be observed that the percentage of losses in the different countries varies significantly. In Luxembourg, the level achieved is 1.72%, compared to the levels in Hungary, Poland and Romania of around 12%. The average level is around 6-7%.

It is difficult to draw precise conclusions for the differences, but the reasons are likely to include:

- Precise definition of losses
- Level and security of coverage of customer metering
- Inherent design of networks

EVOLUTION OF DISTRIBUTION REVENUE

The purpose of this Chapter is to see if there are trends in distribution revenues which have an observable relationship with styles of regulation, quality standards, or other factors related to their operating environment. Average revenues for the companies in the different countries have been reviewed for the period 1997-2003, using the 1997 figures as a base (100) figure. The results are shown graphically in Figure 8. In general it can be observed increases in revenues in Eastern European countries and decreases in Western Europe.
This chapter is intended to focus on the trend of revenues, rather than on the absolute figures. In this respect Eastern European countries show increasing revenues as a result of moving from a position of significant state subsidy to one of the market-based prices. In Western European countries, where there is a downward trend in revenues, prices started at a broadly cost-reflective position. The impact of incentive regulation has prompted significant efficiency improvements resulting in lower costs, and thus revenues. This appears to be confirmed by the conclusions of the EURELECTRIC report on “Business Trends in the European Power Industry - The Financial Situation of Distribution Business”. In order to summarise, it can be stated that despite of different trends in the development of revenues, a convergence of the market can be deduced.

GENERAL CONCLUSIONS

The following main tendencies or driving forces were identified which seem to be already now and in foreseeable future influential for the operating environment of distribution companies: internationalization & consolidation towards sustainable size, unbundling, profitability and regulation, ongoing efficiency improvements and open market performance.

The information contained within this report shows the very diverse nature of the DSOs, their operating environment and the nature of the regulatory regime. The EU Directive and overall sharing of information between regulators is considered to be likely to drive greater convergence between countries. Accordingly it is likely that regulators and companies will be driven to examine differences in operating environments and performance. This is likely to lead to a better understanding and sharing of best practice. However, it is important for all parties to ensure the inappropriate comparisons are not made using a partial view of the data.

Challenges ahead

As this report shows, the distribution system operators are confronted with important and in some cases new challenges:

- from the liberalisation point of view: the unbundling seems to still be a pending issue and should be approached from a pragmatic and efficiency angle, in a more global context.
- from the customer point of view: different processes still need to be improved, simplified and harmonised, in particular switching and metering processes. The quality of customer service and security of supply also should be further looked after.
- the development of distributed generation and its integration in the distribution networks.
- different operating environments as shown in the report.
- further efficiency improvements to meet the regulatory and customers expectations

and in spite of all that, to remain profitable companies, able to finance the necessary investments and needed improvements.

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