



**European Regulation Forum
on Electricity Reforms**

Bergen SESSA Conference “Harmonising effective regulation” Scientific Consensus

SESSA, a programme financed by the European Commission, is a European forum on electricity reforms involving researchers and energy stakeholders (<http://www.sessa.eu.com/>). The first SESSA Conference, *Refining Market Design*, was held in Cambridge, on 14-15 July 2004. The second SESSA Conference, *Addressing Market Power and Industry Restructuring for Consumers Benefits* took place in Stockholm, on 7-8 October 2004. The third SESSA Conference, *Perspectives and Challenges of EU Electricity-Enlargement*, was held in Berlin, Germany, on 9-10 December 2004.

This report summarises the scientific consensus of the academic participants at the fourth SESSA conference, *Harmonising effective regulation*, organised by SNF, Bergen, Norway. The conference addressed issues outlined in work package six, WP-6, of the SESSA programme- a European Commission financed forum on electricity reforms involving academics and stakeholders from the European electricity industry. The objective of WP-6 is to examine the status of and mechanisms for harmonizing electricity sector-specific and general competition regulation at the national and the European levels.

Main motivation for harmonisation of regulation at the national and European levels is to assist in the transition of electricity sector from the traditional centrally planned framework to a decentralised framework that promotes economically efficient, secure and environmentally sustainable supply of electricity to the European consumers. This calls for an establishment of *competitive market-driven generation and regulated transmission and distribution* networks characterised by open and non-discriminatory access that promotes least-cost, reliable, secure and *environmentally responsible* operations and future development of electricity industry across Europe

A prerequisite for establishment of competitive markets and efficient network regulation is the presence of an independent competent regulator that enjoys exclusive decision making powers and arms length relationships with government and

stakeholders. The European directive of 1996 said very little about role of the regulator, while the directive of 2003 on the other hand is more specific, although none of these directives have ventured to make recommendations regarding concrete organisational form for the regulatory function. The current divergence in organisational forms observed across Europe is thus not unexpected. Further, given that successful achievement of the objective is contextual depending on the history, politics and socio-economics of individual countries, uniformity of organisational forms or particular regulatory regimes is not a legitimate goal in itself. The main objective should be to assure minimum regulation that is harmonised with respect to competence requirements and independence from government and interest groups intervention.

In addition to regulatory independence, equally important is also the independence of the transmission system operators as facilitators

of competition in the generation markets. Transmission operators through their operations and investment decisions not only affect least-cost transport of electricity but also have important impacts on contestability of spatially and temporally differentiated electricity markets. In the future discussions related to organisation of transmission function, it is important to assure that transmission operators role as “proxy” regulators of competition is independent of government and interest group intervention.

As regards the design of regulatory regimes, there are various alternatives that are available of which conduct regulation involving specific regulatory mechanisms (price-cap, revenue-cap, rate of return models etc) is currently the main mode of regulation in the European electricity market. The main guiding principle in this context is that regimes that are driven by economic-incentives that reward cost-efficient operations are superior to the traditional cost-based rate of return regimes. Conduct regulation can be imposed on the network monopolies through various models and each model has its strengths and weaknesses. That some countries for example cap revenues while others impose detailed price-caps is not so much a problem. Regulatory commitment and stability in regulatory regimes and environment is the most crucial factor given the need to undertake long-term irreversible investments in the sector. Another important issue is that incentive-based regulatory regimes pose a challenge to assure efficient provision of reliability of service by the regulated network owners as such regimes have embodied incentives for reducing reliability of service to meet the budgetary constraints implicit in the regimes. It is important that such regimes be supplemented with mechanisms that explicitly account for the quality of service dimension to avoid that quality and reliability of supplies are not sacrificed in search of cost efficiency

Benchmarking for parameterisation of conduct regulation regimes is an important issue. In benchmarking applications the regulator is generally interested in obtaining a measure of firm’s efficiency to design an incentive mechanism. There are a variety of methods to measure efficiency. A lot of data and information exist on various approaches to the benchmarking of the performance of electric utilities in European countries. The general conclusion is that irrespective of the methods used for benchmarking, the results of such exercises should be used with care. The emphasis should be on using the empirical results to support rather than dictate the

parameterisation of the chosen regime. Regulatory discretion and commitment are important in this process.

Regulation of infrastructure (network) activities can take various forms and be approached from various angles. Some alternatives to conduct regulation include regulation by exposure to competition for example through auctioning of monopoly rights, and regulation by contracts where establishment and enforcement of rights and responsibilities of the individual market participants is of crucial importance. Clearly defined rights and responsibilities reduce the traditional inefficiency and market failure reasons for regulation. Much of the current cross-border harmonisation between the transmission networks in the Nordic market is based on voluntary contracts between the transmission operators in the region. Regulation by contracts provides an interesting option for regulation of network monopolies in the European electricity market.

Reliability and security of supply is a necessary condition for continued political support for transition of electricity sector from the traditional centrally planned framework to a decentralised market driven sector. That the issue dominates the contemporary agenda in Europe is not surprising. The recent wide spread failures in electricity supply both in Europe and in liberalised markets elsewhere has further strengthened the resolve of the policy makers to address this issue.

Reliability and security can be seen as multidimensional attributes of electricity supplies where differences in these attributes map a given electricity service into a spectrum of services that although being similar, are not perfect substitutes as not all consumers value these attributes equally. Addressing reliability and security issues calls for a common understanding of these concepts. A major hurdle in handling of reliability and security issue in Europe is the multiplicity of definitions and goals, and consequently lack of agreement both with respect to problem definition and not the least, if, and in what manner the regulatory interventions should be designed.

In the context of electricity, we may distinguish between two concepts; adequacy and reliability. In brief, the former refers to adequacy of generation, storage and network capacity in an electricity system to meet demand under normal conditions while the latter refers to reliability of the given capacity to meet demand in face of short-term contingencies. The issues are

closely related and not independent of one another. The prevailing opinion is that it is the price signals from the electricity markets that should govern adequacy of investments in generation and storage capacity. The opinion holds, provided the electricity markets function competitively and suppliers are free to ration non-price responsive demand in the electricity market. However there may be a number of market failures that may distort price signals and equity considerations may limit the free rationing of non-price responsive demand, thus imposing constraints on the market as an efficient delivery mechanism for capacity.

The reliability issue has to do with operation and development of capacity of electricity networks, which per definition are natural monopolies. Further at the current level of technology, differentiation of supplies along the reliability spectrum is also limited such that reliability is not a private good. In contrast to the adequacy debate, there is general agreement as to the need for regulation to assure reliability in electricity supply. The need for reliability regulation mechanisms is particularly important given the vulnerability of the currently prevalent incentive based network regulation in most of the European countries. EU wide comparisons of service reliability call for an analysis of the frequency and consequences of power interruptions across countries. However, given the wide diversity in the measurement practices across different countries, such comparisons are not meaningful. A more meaningful comparison should focus on the regional level. A comparison of reliability of transmission networks in the Nordel region indicates a wide variation in reliability both with respect to actual levels and trend during the recent years.

Designing an effective service reliability regulation mechanism calls for: a clear definition of a reliability measure, a benchmark against which reliability is to be compared, and an incentive mechanism that promotes maintenance of network reliability. In addition, distribution considerations would call for minimum and targeted standards to avoid large differentiation in the service-quality across different consumers. Current status in Europe, with few exceptions, indicates that the regulation of reliability is still in its infancy stages. The main exceptions include countries such as Denmark, Norway, Italy, Spain and the UK. Norway is perhaps the country with the most advanced reliability regulation schemes where revenue caps facing network companies are adjusted in line with the level of energy not supplied by the regulated utility. Experience with the

implementation of the regime in Norway has been positive as the introduction of the scheme is associated with fall in energy-not-supplied. However, it is too early to draw general conclusions on the basis of the Norwegian experience, given the short-time period the scheme has been in operation. Another important conclusion is that detailed regulatory mechanisms, as in Norway, are not costless and the Norwegian network regulation mechanism in general is quite costly in terms of implementation costs.

In interconnected power systems, reliability of supply is a global phenomenon that is difficult to partition along the geographical borders of the individual power systems. With increasing amount of cross border integration of electricity markets, interdependence across the interconnections has increased dramatically. Recent major power outages both in Europe and in the US confirm that power interruptions originating in any particular system may have significant detrimental cross-border impacts. Satisfactory handling of reliability in interconnected systems calls for effective cross border coordination, cooperation and communication among the system operators to develop a comprehensive set of common reliability standards to ensure appropriate reliability of supply in the integrated power markets. Efficient design and implementation of formal cross-border regulatory mechanisms is a technically and judicially demanding activity. Achievement of effective cross-border coordination and harmonisation of reliability rules, standards and procedures through formal regulatory mechanisms is prone to both institutional and informational deficiencies. The policy area is quite suitable for harmonisation through voluntary arrangements - VA – pragmatic instruments well known from the area of environmental management and policy in the recent years in Europe. Nordel system operation agreement among the system operators in the region is a model of such cross-border harmonisation. The main drivers of the Nordel process are favourable historical experience combined with national incentive regulation mechanisms that provide motivation for internalisation of cross-border network externalities. However, equally important has also been the credible threat inherent in the political commitment expressed through the institution of the Nordic Council of Ministers for cross-border integration in the Nordic region.

A successful transition to a decentralised and integrated electricity sector in Europe implies also the need for coordination and

harmonisation of rules and supervisory standards for competition and regulation. What are the main obstacles to competition and market integration? The first and the second SESSA conferences addressed these issues in detail. The two main barriers as mentioned in earlier conferences are insufficient or ineffective unbundling between transmission and generation, and limited effectiveness of imports as a viable source of competition due to interconnection constraints. Increased interconnection, in particular, may dramatically improve market structure, particularly in smaller Member States. However, efficient interconnection development calls for clear and harmonised rules concerning the allocation of capacity and congestion management across the integrated electricity wholesale markets. Can competition policy at the EU level help reduce such obstacles? The potential is not unlimited. Investigations into capacity reservation can lead to improved access to inter-connectors, however, it is difficult to identify behavioural abusive practices as opposed to contractual practices. Successful integration of electricity markets also calls for coordination of regulation of the electricity sector and other energy sectors. It appears that, in Europe, most of the competition in the energy markets is to be coming from electricity incumbents entering the gas market and vice versa. Thus in the future, a strict policy on mergers involving gas and electricity companies will be crucial.

An important issue that remains is related to the harmonisation between general competition regulation and sector-specific regulation. Various alternative organisational forms are in use in different countries, however the most common organisation is division of regulatory responsibilities between the competition and sector specific authorities. One

exception in this context is the situation in the Netherlands where sector specific regulation is integrated as divisions within the Competition Authority. Some relevant questions in this context are: What is the “proper” division of labour and responsibility between sector-specific and competition policy regulation? Should this be considered differently for energy markets under deregulation than for “mature” liberalised energy markets?

The contributions made at the SESSA WP 6 workshop have provided useful insights into the regulatory issues that need to be addressed to further the process of establishment of an efficient decentralised delivery mechanism for electricity sector in Europe. Evidence presented indicates that despite diversity of organisational forms and practices, the momentum has been impressive and already some workable benchmark structures are crystallising from this process. In particular, experience from the Nordic model of organisation as a mature benchmark was a subject of discussion in presentations and discussions among the participants. What distinguishes the Nordic model is not only the design details of its individual elements many of which have influenced fine-tuning and development of other organisational structures both in Europe and elsewhere, but also the role that cross-border political cooperation has played in steering institutional development in Norden. Not to mention the “ownership neutral” stance in the Nordic model, that allows coexistence of public and private ownership in a decentralised market. The organisational and methodological innovation and experience accumulated in the development of the Nordic market framework should provide useful information that can be used in other European countries.