REGULATORY CHALLENGES IN RESTRUCTURING THE ELECTRICITY INDUSTRIES IN EASTERN EUROPEAN COUNTRIES

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INTRODUCTION

Establishing a regulatory framework for the electricity industry that is effective in ensuring access to natural monopoly networks, restricting monopolistic or anti-competitive behaviour and promoting competition is key to achieving the benefits of industry restructuring and private sector participation.

This paper discusses the challenges facing the countries of East and South East Europe (E&SEE) in establishing effective regulatory frameworks as they restructure their electricity industries.¹

We see these challenges as twofold. First, the challenges for government in implementing the institutional framework necessary for effective regulation. Second, the challenges for the regulatory authority in implementing and administering the new regulatory regime.

Prior to discussing these challenges in detail, the following provides a brief background on the steps being taken by E&SEE countries to restructure their electricity industries and promote competition in the industry. This restructuring exercise provides a critical backdrop to the issue of the electricity sector regulation in the region.

BACKGROUND

Most E&SEE countries are in some stage of accession to, or integration with, the EU. This process crucially affects the restructuring of their electricity industries and the development of new regulatory frameworks. Guidance for the restructuring process in these countries is provided by EU Directive 96/92/EC [1], the European Commission (EC) proposal for amendments to this directive [2], and the relevant developments in EU electricity markets.

The EU Directive sets rules and minimum requirements for the electricity industries across the EU. However, in practice, many EU countries have gone (or are planning to go) far beyond the bare requirements of this directive.

For unbundling, the EU Directive inter alia requires:

i) management separation of the TSO (transmission system operator) from activities not relating to the transmission system, including appropriate mechanisms for preventing confidential information being passed by TSO to other activities in an integrated company; and

ii) accounting separation of generation, transmission and distribution activities from each other and from other non-electricity activities.²

The rationale and intention behind these unbundling requirements is that there is an effective separation between (i) industry elements that produce and trade electrical energy and that should be exposed to market competition and (ii) industry elements that are natural monopolies (transmission and distribution) and that should impartially and transparently facilitate competition among generators, suppliers and electricity traders (Figure 1).

Unbundling also has the objective of introducing a sufficient number of competitors in generation and supply businesses to support the establishment of competitive markets in these industry segments.

Figure 1: The rationale of electricity industry unbundling is based on separating the natural monopolies and encouraging competition elsewhere

The requirements for accounting and management separation described above were envisaged as an appropriate minimum requirement. However, many EU countries have gone a step further and implemented legal or ownership separation. This has also been the case in the E&SEE countries with the majority of countries in the region having legally separated their transmission businesses from generation and distribution activities.³

The EU Directive required a staged process of opening domestic electricity markets so that eligible consumers are free to conclude their own supply contracts.⁴ Member States were initially required to declare all final consumers consuming

¹ For the purposes of this paper, we define East & South East Europe as including the countries of: Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Croatia, Bosnia-Herzegovina, Serbia and Montenegro, FYR Macedonia, Albania, Romania and Bulgaria.

² The draft EC proposal for amendments to this directive would strengthen these unbundling requirements so as to require inter alia legal separation for the TSO and accounting separation between distribution and supply activities.

³ The countries where legal unbundling of transmission businesses had not taken place at the time of writing this paper are Estonia, Hungary, Croatia, Bosnia, Serbia, Montenegro, FYR Macedonia and Albania.

⁴ The final stage requires that in 2003 the minimum of about 35% of the electricity markets are open (calculation is based on consumption of eligible final consumers).
more than 40 GWh per year as eligible consumers with this threshold reducing to 20 GWh then 9 GWh over a period of six years following implementation of the directive i.e. by February 2002.

In the E&SEE countries, all of the countries accepted for imminent membership have already achieved the minimum opening threshold of 40 GWh, with a number substantially below this threshold (e.g. Hungary, 6.5 GWh). The opening of electricity markets in the non-accession countries of SEE, however, is less well advanced. For example, no electricity consumers in Bosnia-Herzegovina, Serbia, Montenegro and Albania are yet to officially gain the right to negotiate supply contracts.5

This progress in allowing consumers to independently contract for electricity supply needs to be seen in the context of the number of suppliers available in each country, and ultimately, the number of independent generation companies. In most countries in the region, generation is dominated by one, two or three businesses. It is only in Poland that the market share of the three largest generators is less than 70 per cent. Cross-border trading may mitigate this problem and there are moves to establish regional electricity markets in both the Baltic region and SEE. However, this is constrained by the availability of sufficient interconnection capacity, particularly in SEE – although this is currently being addressed through the construction of new transmission lines and substations and re-building those damaged by war.

In summary, then, electricity industry restructuring in the E&SEE region necessary for promoting competition is, as might be expected, progressing faster in those countries soon to become members of the EU than in other countries in the region.

However, in all countries in the region there are significant constraints to the effective establishment of competitive electricity markets. This, in itself, represents perhaps the most important challenge for electricity industry regulation in the region: the lack of competition places a greater reliance on government influence over regulatory decision making. This challenge is not intrinsically different from that faced by other countries, including those within the EU, in establishing independent regulatory agencies. However, for the transition countries of E&SEE, where there has been relatively little recent experience of administrative authority independent of the executive this has represented a particular challenge [4].

The independence of a utility sector regulatory agency may be assessed by examining five key factors:

(i) single or multi-member council or commission;
(ii) staggered terms of appointment for members;
(iii) a nomination or confirmation process for members of the council or commission involving more than one branch of power (e.g. executive and legislative);
(iv) protection for council or commission members against arbitrary dismissal; and
(v) control over its own budget.

In terms of meeting these tests for the independence of regulatory agencies, it is not clear that any of the regulatory agencies that have been established to date in the region meet all five tests for independence from government. While most countries have provided members of their regulatory councils or commissions with protection from arbitrary dismissal by government, they have been less willing to provide their regulatory agencies with control over their own budgets. Influencing the budget of a regulatory agency provides a more indirect, but equally efficient, mechanism for government influence over regulatory decision making.

At the same time, E&SEE countries appear to have been more successful in imposing accountability obligations on their new regulatory agencies in terms of ensuring that:

(i) individual decisions are published; and
(ii) annual reports on activities are submitted; and

The directive does not require that Member States establish a specific agency to oversee regulation of the sector. However, most Member States have chosen to establish dedicated regulatory agencies for sector, many of which are independent of direct government control.6

This choice of institutional framework reflects the benefits that independent regulatory agencies bring in terms of the credibility and effectiveness of the regulatory framework [3]. In particular, private investors are more likely to invest in long-lived assets, such as generation plants and transmission and distribution networks, where they have confidence that regulatory decisions will not be manipulated by governments for short-term political benefits that erode profits and returns on investments.

The countries of E&SEE have also, by and large, chosen to establish regulatory agencies for the electricity (or energy) sector separate from government ministries.7 However, in E&SEE the challenge has been to establish regulatory agencies that are truly independent of government control, while ensuring that these agencies remain accountable for their actions and impose the minimum possible costs on the industry.

The independence of E&SEE regulatory agencies for sectors such as energy, telecommunications and transport in addition to their energy sector responsibilities.

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5 The official legal position may, however, be at variance with activities on the ground. For example, we understand that the aluminium smelter in Montenegro, which consumes in the order of 40% of total electricity supplied in Montenegro, may negotiate for the supply of electricity from sources other than “Elektroprivreda Crne Gore” (the incumbent, vertically integrated electricity utility).

6 The EC’s proposal for a directive to amend Directive 96/92/EC would require that a specific national regulatory authority be established. It would not, however, require that the national regulatory authority be independent of government.

7 A number of smaller countries in the region, such as Latvia and Lithuania, have established multi-sector regulatory agencies responsible for sectors such as water, telecommunications and transport in addition to their energy sector responsibilities.
An important variation on price cap regulation is revenue cap incentives for efficiency that these methodologies create. To be superior to cost-plus forms of tariff regulation given the lower tariffs at the periodic re-setting of the price cap. Cost reductions are then passed on to consumers in the form of increased profits through achieving cost reductions. These capping prices for a fixed period and allowing the utility to earn investment.

Incentive compatible methodologies, such as price cap regulation, seek to generate incentives for efficiency by pricing mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own operations. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appeal for price cap regulation. (However, as cost-plus regulation becomes more sophisticated it can be more resource intensive than price cap regulation.) As a result, the appropriate price setting methodology may also be influenced by the administrative capacities of the regulatory agency.

These considerations mean that it is unlikely that one particular price setting methodology will be appropriate for all countries in the region. In countries where investment conditions are uncertain and regulatory agencies are newly established, relatively simple forms of cost-plus regulation may be the most appropriate methodology. However, over time, as the regulatory agency becomes administratively stronger and investment conditions improve, it may be appropriate to shift to a more sophisticated price capping technique. However, this shift has not always taken place in the E&SEE region. In Poland, for example, where investment conditions are stable and which should not have the resource disadvantages that face smaller countries in the region, cost-plus tariff setting techniques continue to be used by the Energy Regulatory Authority. In contrast, price caps are used for regulating electricity tariffs by the Public Utilities Commission in Latvia, perhaps reflecting the advantages of it having a multi-sector regulatory agency (discussed further below).

The quality and availability of information from the regulated businesses is also likely to affect the price setting system. We discuss information requirements for regulation in further detail below. However, in relation to price setting, the information burden of determining appropriate cost levels may argue for price cap regulation. Effective regulation depends crucially on regulatory agencies being able to access from regulated electricity businesses the information necessary for informed decision making. In all regulatory systems there are problems of imperfect and asymmetric information. However, this problem is even more aggravated in E&SEE countries with their legacies of inefficient electricity industries unaccustomed to modern accountability and auditing, and political rather than economic drivers in their businesses. Newly formed electricity regulators in these countries, among many problems, face the problem of establishing a reliable, robust, effective and efficient information collection and management system. In principle, the regulator requires information for two major purposes. First, to monitor the electricity market, ensure that it operates transparently and that there is fair competition, and second, for transmission and distribution businesses, to ensure that they are not distorting competition and are delivering their services (their output) at set levels of quality. Electricity market monitoring typically requires information on prices and volumes traded, including cross border trading and

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8 All of the regulatory authorities in E&SEE for which we were able to gather data are required to produce an annual report and the majority are legally required to publish their decisions. Appeals mechanisms generally appear to be in place in most countries. Few of the regulatory agencies, however, appear to be required to produce audited financial statements in relation to their own income and expenditure.

9 An important variation on price cap regulation is revenue cap regulation whereby total revenue for the regulated utility, rather than its prices, is capped for a five year (or other fixed) period. This variation of price cap regulation has been used in the UK for the regulation of the transmission network.
third party tariffs for use of network services, as well as relevant information on operating status of transmission and distribution networks. Network operation information is required to reveal any technical constraints in electricity trading, any unfair treatment of generation and supply businesses by network operators and any market power that may arise from technical constraints.

For transmission and distribution businesses much more information is required. Typically, this information relates to two broad areas, (i) inputs (all operating and capital expenditure these companies require to maintain the required level of service they provide), and (ii) outputs (all relevant measures indicating the level of quality of their service). It may not be quite obvious from such a broad classification, but the required information is very comprehensive and includes items such as regulatory asset base and its value, financing costs, taxation, progress in exercising planned expenditures etc.

Regular, timely and complete as required information is essential for correct and appropriate regulatory decisions. All of this information has to be structured in such a way to efficiently support the regulation process, but also to inform consumers, the government and other interested parties. However, some of this information is commercially confidential (particularly in the area of electricity trading) and this has to be appropriately protected, as breaching its confidentiality may be detrimental to the operation of a competitive market.

Early standardisation of procedures for information collection and maintenance, accompanied with appropriate regulatory instructions and guidance would benefit the industry and the regulator equally. The lack of these systems in many countries in E&SEE, however, means that regulated electricity businesses often suffer from multiple requests for the same information and that regulatory agencies suffer data comparability problems.

It is important that the relevant legislation provides the regulator with sufficient powers (including effective financial penalties) to enforce timely information submissions from electricity companies. Also the regulator has to be enabled to mount appropriate information audits as required. Furthermore, the whole this issue is closely related to a broader issue of modernising corporate and government financial accounting, auditing and reporting in E&SEE countries. The challenge of establishing an effective information system that will support a successful regulation of the electricity industry requires a lot of skill and political will. Any shortcomings may be very detrimental to the electricity industry and electricity consumers.

Service level and quality regulation

Increased pressures on electricity industries to lower costs as a result of industry restructuring and the introduction of competition is giving rise to concerns world-wide that this might be detrimental to quality of service delivered by electricity businesses at a time when consumers’ expectations regarding service quality are increasing. As a result, regulation of service quality is an important function of electricity industry regulation and a key counterpart of price regulation.

In broad terms, the service quality experienced by consumers has two components, one arising from generation and supply businesses and the other from transmission and distribution businesses. Where an electricity market is well established and consumers have a wide choice of suppliers, competition in the market can generally be relied upon to deliver an appropriate level of service quality in the generation and supply components. In these cases, the regulator has a duty to monitor service quality and intervene where there are incidences of unacceptable practices. With the process of decreasing the threshold for the eligible final consumers (i.e. those free to choose their supplier) the regulators in E&SEE countries will increasingly need to address this issue.

A more complex challenge for the regulators, however, is regulation of the quality of service provided by regulated transmission and distribution businesses. For these industry segments, there are no market forces able to establish and maintain desired levels of service quality. Instead, the regulators are practically in the position of negotiating on behalf of consumers both the prices for electricity transportation and levels of quality for such services that these prices should purchase for the consumers. The main challenge for regulators is to determine an “adequate and reasonable” level of service quality they should be asking the electricity companies to achieve.

Generally, service quality requirements are categorised in two ways: Guaranteed Standards and Overall Standards. Guaranteed Standards focus on aspects of service quality that individual consumers receive, such as maximum time to restore supply after an interruption, maximum number of interruptions in a period (usually a year), maximum time to connect or re-connect a consumer, maximum time to respond to or visit a consumer, maximum time to respond in person to a telephone inquiry etc. Overall Standards focus on broader service to all consumers or their subsets, such as the average number and duration of supply interruptions (like SAIDI, SAIFI, MAIFI), average times of restoration (like CAIDI), fault rates per 100 km of circuits, average time for telephone responses to customer inquiries, number of customer complaints and their resolution, etc. It is not unusual for a regulatory regime to impose penalties payable to individual customers when their electricity company breaches a Guaranteed Standard.

Defining effective financial incentives has to strike a fine balance so that they are substantial enough to motivate the electricity companies, but not so excessive as to be detrimental to the financial health of the regulated business. Also, the incentives need to be targeted so as to achieve the desired level of service quality as precisely as possible.

While some basic incentives (penalties) associated with Guaranteed Standards is a longstanding practice in many countries, a wider use of incentives (penalties/rewards related to Overall Standards as well as Guaranteed Standards) has only relatively recently started to be implemented, with the most advanced form being developed in the UK. These
incentives are aimed at introducing market-like forces to support bringing about the required service quality in an economically efficient manner. However, there is a need to structure these incentives in such a way that they provide sustainable service quality, i.e. that there are no short-term improvements (and rewards) made to the detriment of medium to long-term investment and service quality. In other words the regulator should not create “perverse” incentives.

Most E&SEE countries are on the way to introducing some form of performance based regulation, though they are generally at the early stages. However, some are reporting significant progress in the area of regulating distribution businesses, such as Hungary and Romania [7]. For example, in 1999 four of six service providers in Hungary were financially penalised on account of failing to meet the required Overall Standards.

Quite sensibly, after introducing the guaranteed and general performance standards for distribution businesses, the Romanian regulator has allowed a period in which the financial implications have been postponed, in order to ensure that the necessary reporting and monitoring system is in place [7]. This signifies a point important to all countries, and particularly to E&SEE countries: if financial incentives are to be applied, then it is essential to design them carefully and to establish a sound, robust and consistent information system for reporting and monitoring service quality performance indicators (including consistent definitions, regulatory instructions and guidance and auditing procedures).

REGULATORY PROCESS AND ADMINISTRATION

Staffing and administration of a regulatory agency, including its regulatory decision making processes, is equally important as the choice of appropriate methodologies in ensuring an effective regulatory framework.

Staffing of regulatory agencies

Effective operation by electricity regulatory agencies in E&SEE and elsewhere requires a sufficient number of appropriately experienced and qualified staff, including economists, financial analysts, accountants, engineers and lawyers. In the transition countries of E&SEE, however, regulatory agencies often face problems in accessing sufficiently qualified and experienced staff in the local labour market. This is particularly the case in relation to non-technical disciplines such as accounting and financial analysis, where there tend to be more significant skills shortages, rather than technical disciplines, such as engineering.

The problem that E&SEE regulatory agencies face in recruiting sufficient and appropriately trained staff is exacerbated where regulatory agencies are required to employ staff under civil service conditions, and as a result, are not able to match the higher salaries available in the, often privatised, electricity businesses. A number of countries in the region, such as Latvia, have responded to this problem by exempting their regulatory agency from civil service employment conditions.

A further issue facing regulatory agencies in the region, particularly in smaller countries, is the unavoidable fixed costs of regulation [5], which mean that higher costs are likely to be combined with tightest labour market constraints. Countries such as Latvia and Lithuania have responded to this problem by creating multi-sector regulatory agencies, responsible for a number of infrastructure sectors including energy, in an effort to gain cost efficiencies in regulatory activities. Not all small countries in region have taken this path through. For example, the electricity law being debated in the Montenegrin Parliament at the time of writing this paper will establish a separate regulatory agency for the energy sector.

Decision making processes

The process by which a regulatory decision is made by a regulatory agency is critical for ensuring that the regulatory regime is seen as accountable and legitimate.

A number of criteria for effective regulatory decision making are identified in [6]. These are as follows:

- **Transparency**: regulatory objectives are clearly defined, stakeholders are consulted, regulations are clear and published, decisions are explained;
- **Appeals mechanisms**: accessible, fair and efficient appeals procedures that cover both the conduct of the decision making process as well as outcomes;
- **Consistency and predictability**: new regulations are consistent with existing regulations, enforcement is even handed, changes limited to those which can be reasonably foreseen or anticipated as logical and necessary development of existing methodologies and rules;
- **Proportionality**: alternatives to regulation are considered, impacts of regulation are identified and costs and benefits are appropriately balanced;
- **Reproducibility**: calculation of key figures underlying important decisions should be reproducible, sufficient information including models and algorithms should be made available to stakeholders;
- **Non-prejudicial**: actions taken by regulators prior to formal decisions should not prejudice the outcome of those decisions;
- **Non-retrospective**: companies should not be unfairly penalised for past behaviour through regulatory decisions;
- **Timeliness**: the application of regulatory decisions should be communicated sufficiently in advance so stakeholders are able to adjust their behaviour;
- **Flexibility**: regulatory methodologies, actions and decisions should adapt to changing economic circumstances.

There are some trade-offs between these criteria. For example, there may be tension between the requirement for consistency and predictability and the requirement for flexibility. In E&SEE, initial periods of industry restructuring and establishing a new regulatory agency may require some transitional solutions. However, for any industry to prosper, it needs not only right conditions but also stability (even more needed in E&SEE countries). This argues for setting the correct principles and objectives from the beginning, even if initially there are some transitional solutions. That said, it must also be recognised that neither the electricity industry nor its regulatory framework can afford to remain completely
static, but inevitable developments should recognise and respect the broad guiding principles that provide the industry with a degree of stability.

While it is not possible within the scope of this paper to assess the performance of each regulatory agency in E&SEE against the criteria identified above, it is possible to make a few general comments, particularly in relation to transparency.

Most regulatory agencies in the region have achieved a general degree of transparency in their operations. As mentioned previously, most produce annual reports on their operations, most are legally required to publish their decisions, and most have a website on which various decisions and other information on operations is available.

However, it would also be fair to say that a number of regulatory agencies appear to have some way to progress in terms of formal consultation processes prior to making regulatory decisions, and while decisions may be published, there is often a lack of published material explaining the reasons behind each decision. This is not always the case, however. The Energy Regulatory Office of the Czech Republic appears to be relatively good at publishing the reasoning behind its decisions.

More generally, to meet the criteria outlined above strong administrative skills are required within the regulatory agency, and as pointed out previously in this paper, this presents a significant challenge for regulatory agencies in E&SEE, given their historical starting point, the constrained labour markets for management skills in many countries in the region and the resource constraints faced by the smaller countries.

CONCLUSION

Achieving efficient and effective electricity industry regulation in E&SEE faces a number of challenges in terms of:

- the weight of responsibility placed on regulatory agencies as a result of industry restructuring only resulting in limited competition in the sector;
- the need to choose appropriate regulatory methodologies that reflect the changing circumstances of the industry in each country; and
- the constraints presented by local labour markets, particularly in the smaller countries in the region.

A number of countries in the region are adopting policies to successfully address these challenges through (i) the creation of regional electricity markets to increase competition, (ii) multi-sector regulatory agencies to concentrate scarce regulatory resources, and (iii) releasing regulatory agencies from public sector employment conditions to ease the task of attracting well qualified staff.

Furthermore, other initiatives such as regional co-operation through the Energy Regulator’s Regional Association is assisting regulatory agencies in developing common approaches and methodologies that may have the effect of reducing the fixed costs of regulation for individual agencies, see for example [7]. Substantial assistance packages to the regulatory agencies through the EU, such as those currently being implemented in Romania and FYR Macedonia, is also helping their development.

In summary, while the challenges faced by regulatory agencies in E&SEE are substantial there are good grounds for optimism that these will be successfully addressed over the coming years, and that competitive, well-regulated electricity industries will emerge in the region.

REFERENCES