



3rd Legislative Package Input

Paper 1: Unbundling

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1 Introduction

The ERGEG have produced the following paper in response to a number of questions addressed by the European Commission, including:

- Are there sufficient differences between gas and electricity to warrant a different treatment concerning unbundling?
- How should ownership unbundling be applied in relation to publicly owned companies?
- What is the most appropriate ISO model for gas and electricity? How deep should the ISO model be? What are the consequences for regulatory oversight and what are the differences from ownership unbundling?
- Should there be more specific requirements for gas storage?
- Is there a necessity to change the regulatory framework for distribution system operators?

The following analysis represents a broad consensus amongst the European regulators in response to these questions.

It should be noted, however, that some regulators maintain different concerns around the issue of unbundling that were not addressed by the above questions, and therefore still remain open for consideration, including in terms of the European Commission's proposed "3rd package" of legislation. These include, in particular, concerns that:

- Further unbundling will not necessarily improve competition in those Member States that are currently reliant on a single supplier. In this context, it should be noted that the ERGEG Response paper¹ of 6 February 2007 noted that, for some issues and in specific circumstances "there could be possible exemptions from the standards and requirements laid down in the Directives". Such exemptions would be determined by the Commission following the advice of the regulators.
- Again, in those Member States reliant on a single supplier security of supply could be affected if ownership unbundling is not applied to all parts of the value chain, inside and outside the EU. That is, a company active in any of the competitive elements of the full gas/electricity value chains should be precluded from exerting undue influence on any network operator in the EU.
- Although effective unbundling would address one of the barriers to investment, namely the incentives on the TSO, it cannot address all such barriers. Others, such as land use permit systems (particularly in the case of electricity), which are beyond the remit of energy regulators, remain and need addressing. In this context, ERGEG has recently published the results of our public consultation on the "Cross border framework for electricity transmission network infrastructure". Barriers have also, in some cases, been created as the unintended consequence of EU environmental legislation, which needs

¹ ERGEG's response to the European Commission's Communication "An Energy Policy for Europe" (C06-BM-09-05), 6 February 2007.

reassessing in the context of the EU's energy objectives. We should also carefully observe the impact of the growing influence of the financial markets in the framework of trading of electricity, gas and CO₂ allowances.

It should also be noted that some regulators felt that, in some circumstances, national public service obligations on TSOs can create market distortions which unbundling would not address.

The ERGEG also intend to continue their work on these issues in 3 areas:

- Since the following paper only examines the above questions from the perspective of the regulatory framework, we will continue to gather further evidence into the existing experience and impacts of different unbundling models. This work has already started and “case studies” highlighting the experiences of Italy, UK and Portugal are attached at Annex 3. Further such analysis will be carried out in the near future.
- We will also continue to examine ways in which the existing provisions for legal unbundling might be improved, in particular in the interim whilst new legislation is negotiated. In this context it should be noted that ERGEG launched a public consultation (30 April – 26 June 2007) on Guidelines for Good Practice on functional and informational unbundling for vertically-integrated TSOs and DSOs.
- And finally, in the longer term and in conjunction with other relevant regulatory authorities e.g. CESR, we will examine and analyse the effects on energy markets of the development of energy-related financial markets.

2 Executive Summary

The Paper focuses on the question of how best to avoid discrimination by TSOs in Europe. It examines the options of ownership unbundling and the establishment of an Independent System Operator (ISO).

The following questions have been examined. The core of the answers is given here:

- a. **Are there sufficient differences between gas and electricity to warrant different treatment as concerns unbundling?** The analysis undertaken came to the conclusion that there is no justification for a different level of unbundling in gas and electricity – in “ownership unbundling” is, in principle, the model in new legislation which EREG recommends. However, added sensitivity may be warranted in terms of the time allowed for *implementation* of ownership unbundling in gas given the importance of production and external players beyond the EU’s borders and therefore the legislative/regulatory reach.
- b. **Should there be more specific requirements for gas storage?** Storage should be effectively unbundled from supply and production activities, based on the existing model of legal unbundling.
- c. **What does ownership unbundling mean and how should it be applied in relation to publicly owned companies?** In principle, a public owner should be treated as any other owner. The effectiveness of unbundling within publicly owned companies will depend on the degree of independence of different public entities and therefore will have to be assessed on a case by case basis by the European Commission.
- d. **What is the most appropriate ISO model for gas and electricity? How deep should the ISO model be? What are the consequences for regulatory oversight and what are the differences from ownership unbundling?** It appears from the analysis that, for discrimination purposes, there are no decisions and only a minimal number of tasks that could be left to a non-independent network operator. The extent that tasks can be delegated to the vertically-integrated transmission owner depends on the level of possible discretion they would have i.e. or how precisely the decisions of the ISO are defined. Nevertheless any delegation of tasks or decisions to the TO will raise questions of enforcement, and potentially of dispute settlement and of litigation cases. Viewed just from the perspective of preventing discrimination, the deep ISO model may be able to significantly improve the situation relative to today’s (legal) separation model. Therefore the distinction between a deep ISO and ownership unbundling is essentially restricted to who owns the assets and pays to develop them. The ISO model adds to ownership unbundling, however, the risk of conflicts arising as regards investing and sharing the profits resulting from transmission activity between the operator and the owner of the assets, without any benefits for the network users. A shallower ISO model might however be considered with respect to dimensions other than discrimination such as optimization, market integration or incentives for investment on European level – although this must be in addition and not as an alternative to effective measures to prevent discrimination.
- e. **Is there a necessity to change the regulatory framework for distribution system operators?** No. The provisions described in directives 2003/54/EC and 2003/55/EC, clarified and reinforced by a new Regulation and/or Guidelines for Good Practice stipulating a detailed legal framework with strong control by regulators, might be the best way forward for the distribution grids. Such behavioural rules, in particular, need very detailed provisions and sufficient monitoring and enforcement powers of regulators.

- f. **Will a Regional System Operator solve the unbundling issue?** No. Improving market integration does not resolve the EU's deep seated problem of undue discrimination on the part of vertically integrated companies. Effective unbundling would have to be a prerequisite of any RSO model in Europe.

3 Background

The European Commission's Sector Inquiry reports that several cases of potential and actual discrimination are due to insufficient unbundling. Even in cases of independent and well empowered regulators the lessons from past experience are that regulation cannot really counterbalance the "wrong" incentives of vertically-integrated network operators without resorting to "micro-management" through heavy regulation. The relevant Directives provide only for a separation of network activities in gas and electricity, still allowing integration in terms of ownership between monopolistic and competitive activities. The separation model (legal unbundling) was found to be ineffective in many respects, although the rationale lying behind it – lack of an appropriate legal framework or lack of enforcement - was not further analysed in detail.

Discrimination has specific adverse effects on security of supply and on the competitiveness of the market. Moreover, the major investment needed in the future gives new impetus to discussions as to whether the regulatory framework in which monopolistic businesses are undertaken should be changed. The European Commission proposed two possible models – ownership unbundling and the implementation of an Independent System Operator (ISO). Effectively, the difference between these models is based, on the one hand, on a correction of the incentives on the network operator through structural change versus a model of micro-management /regulation with less change of management. These models may therefore be considered as alternatives with respect to discrimination, although there are also other criteria to be taken into account where these two models may be seen as complementary.

In order to gauge the advantages and disadvantages of these models reference criteria should be defined. Any future model will have to prevent discrimination, optimize use of infrastructure, incentivize economic investment and enable effective regulatory oversight of monopolistic activities. Therefore, the dimensions against which the evaluation is made are: discrimination, regulation, investment and optimization.

Discrimination normally refers to the unequal treatment of market players by the network operator due to its vertical integration within, or other commercial ties to the competitive businesses eg. production, generation or supply (structural discrimination). However it is also necessary to include the potential of discrimination through so-called "behavioural" discrimination, i.e. some protection of "national interests" even where there are structurally unbundled transmission operators.² Structural unbundling therefore clarifies commercial incentives, but does not necessarily eliminate this second source of distortions.

An analysis of the value chain(s) in electricity and gas leads to the consideration of detailed questions such as:

- Are there sufficient differences between gas and electricity to warrant a different treatment concerning unbundling? Should there be more specific requirements for gas storage?
- What does ownership unbundling mean and how should it be applied in relation to publicly owned companies?

² A sign of this kind of discrimination is the fact that most countries achieve market integration within the country.

- What is the most appropriate ISO model for gas and electricity? How “deep” should the ISO model be?
- What are the consequences for regulatory oversight and what are the differences from ownership unbundling?
- Is there a need to change the regulatory framework for distribution system operators?

Finally, the potential consequences of the unbundling findings for other elements of any new European regulatory framework will be indicated.

It is clear that the regime under which TSOs, ISOs etc are established does not change the necessary allocation of responsibilities, i.e. whether they are European, regional, national or local. Tasks have to be allocated at the optimal geographical level, which depends on the necessary oversight of the network operator involved in solving given problems, the possibility to effectively enforce taken decisions etc.

Furthermore there is a natural presumption that gas and electricity will have to be treated in the same way in relation to unbundling. Only fundamental differences could result in a differentiated regulatory approach. The analysis undertaken by ERGEG came to the conclusion that there is no justification for a different level of unbundling in gas and electricity. However, added sensitivity may be warranted with the implementation of ownership unbundling in gas (e.g in terms of the timing) given the importance of production and external players beyond the EU's borders and therefore legislative/regulatory reach (see Annex 1).

The following report first analyses the consequences of various unbundling regimes for transmission systems with a focus on discrimination and regulatory oversight. In the second part of the report the question of how to treat distribution systems is covered. Furthermore the aim of this paper is to give the regulators' overall assessment on the issues addressed, detached from legal implementation aspects such as compatibility of the models proposed with European and national laws.

4 TSO Unbundling: What are the (regulatory) implications of a ‘second best’ model in relation to the preferred model of ownership unbundling?

4.1 Discussion of ownership unbundling

Since the potential for discrimination will always exist where a vertically integrated company undertakes both competitive and monopolistic businesses, the preferred market structure is ownership unbundling where the network assets are owned by a regulated company performing all of the network activities and with no interests in the competitive markets of production, generation, shipping or supply. The defining element of an ownership unbundling model is that the network is operated and owned by one independent company, which clarifies the incentives, responsibilities and liabilities for the network. Regulatory oversight will still be necessary for an independent network operator as it remains a monopoly. For instance, rules might be needed to prevent companies active in other parts of the value chain (inside and outside the EU) owning shares in the network operator, from exerting undue influence on the network operator and thereby compromising its independence; and rules governing the relations between the management of the network operator and such businesses. However, these rules would not need to be as prescriptive as in other models since the incentive to discriminate would be removed by the structural separation.

Public/Private ownership

The question of “control” of a fully unbundled network operator is also relevant in the context of the debate over public versus private ownership. It is important to state that effective unbundling is necessary in the context of both public and private ownership of the networks. Moreover, whether networks are publicly or privately owned is not a question for regulators to deal with.

In principle, a public owner should be treated as any other owner. Ownership unbundling is only sufficient if it results in the independence of the control of the network operator. In private companies these concepts are closely linked, within the context of defined rules as outlined above. But it could be different if property unbundling was applied to a publicly owned company, and therefore involved the controlling company transferring its assets to another public entity. The same concern may arise when any private shareholder of transportation grids (holdings, hedge funds,..) are simultaneously shareholders in other activities in the energy field.

This raises the question of how to deal with the control of the different public entities (i.e. federal, regional, local; or different public bodies at the same level). In principle, different public entities might inherently act independently from each other, but this cannot be guaranteed. It is not sufficient to have network and the competitive business controlled in different ministries of e.g. the same regional entity.

The effectiveness of unbundling in publicly owned companies will therefore depend on the degree of independence of these entities owning competitive and monopolistic parts of the value chain and therefore will have to be assessed on a case by case basis. An assessment will be necessary that takes into account any broader political considerations which relate to publicly-owned companies.

Whatever the shareholders, there is a need for a real strengthening of regulator’s powers.

4.2 Discussion of the Model of Independent System Operators

4.2.1 Definition of an Independent System Operator (ISO)

The ISO model separates at least the ownership of assets, which stay with the vertically integrated company, from a varying scope of operational tasks of the former network company. The extreme versions of the possible ISO models are described in the Annex C of ERGEG's response to the Commission's Communication "An Energy Policy for Europe" as "deep ISO" and "shallow ISO" models.³

Deep ISO. The deepest version of the ISO model entails all of the functions of the system operator being removed from the bundled company, leaving the bundled company only with the ownership of the assets. In this model the ISO will undertake live network operation, arrange for network access, undertake network planning and make investment decisions, arrange for network connections, undertake emergency planning and levy for use of the network, maintain direct relations with the transmission customers and manage information flows to the outside world.

Shallow ISO. The shallowest model for an ISO entails all transmission functions remaining with the bundled company apart from the live operation of the transmission network during and close to real time.

The ISO models are therefore in between ownership unbundling and the present separation model or model of legal unbundling. This distinction follows the technical logic from long term to short term decisions and actions. This should not lead to the erroneous conclusion that short term actions have higher potential for discrimination and are therefore attached to the ISO in all models. It is therefore possible that an alternative separation of tasks between the TO (transmission asset owner) and the ISO might reduce potential discrimination and at the same time allocate real time operation to the TO.

4.2.2 Arguments in favour of the ISO in relation to ownership unbundling

Fear of reducing the credit rating of integrated companies is sometimes cited as the main argument for ISO models. The obvious reasoning is that selling assets reduces the capital basis of the company or more specifically reduces the share of low risk capital. However this argument is not straightforward as the vertically-integrated company might use the monopoly assets to cross-subsidise the competitive business; in any event the credit rating will in the medium term depend on the alternative use of the liquid assets received. So any investment in assets of a similar risk profile should not change the rating.

Still an obligation to establish an ISO is less intrusive as companies do not have to be forced to sell their assets, so the principle of the "protection of the right to property" is respected. From a regulatory perspective "only", however, the principle of an inherent *incompatibility* is introduced, i.e. between the ownership of essential facilities such as grid assets and the implementation of specific operational tasks.

³ For a graphical illustration of different degrees of "shallowness" see Annex 2

4.2.3 Goals of the ISO model in relation to the separation model

The main purpose of an independent system operator (ISO) model is to reduce the scope for discrimination. An ISO could also be created to allow for a co-operation between several operators for some defined activities. There is no single model for such an approach and in practice there are many different models of ISO that are in place globally (for example the BETTA model in Scotland and the various RTO models in the US). There is no ready model that Europe can simply replicate. In electricity, today's UCTE and Nordel practices and characteristics resemble the ISO model in its key characteristics in a co-operative manner. The central practical and regulatory question with a real ISO model is how to define and manage the relationship between the transmission infrastructure owner (TO) and the independent system operator (ISO): who performs which activities, and how is this regulated to prevent, or at least minimise, the potential for discrimination?

In determining the most appropriate ISO model for Europe, at this stage, it is therefore first necessary to analyse the tasks and competences that need to be fulfilled and the implications – in terms of potential for discrimination and regulatory intrusion to avoid this – of different entities ie. the TO or the ISO, fulfilling these roles.

4.2.4 Essential competences and activities of the monopoly network

Although there are some differences between gas and electricity, at a high level there are also many similar functions required to develop and operate the pipes and wires. Equally, although there is currently no single EU model for the activities of a TSO, it is possible to list the following main tasks/competences where the potential for discrimination exists:

Table of required tasks and potential for discrimination; separate rules and decisions from implementation.

Tasks/competences	Potential for discrimination (H high ; M Medium; L Low)	
	Gas	Electricity
Rules and Standards, Decisions		
Access principles – grid code: access rights, financially firm rights, this includes connection of producers to the grid, sub-grids and customers in electricity and gas where applicable	H	H
Market principles – market code: this includes balancing market, intra day market, provision of losses energy , congestion management, scheduling, day ahead forecast, data exchange, metering, billing in electricity and management of linepack, procurement of flexibility, metering, billing, data exchange, matching in gas	H	H
Security principles – security code: N-1, monitoring, coordination, restoration, black start capability, load shedding, islanding, etc.; forecast of demand for winter in gas	H	H
Schedule management: scheduling of flows between TSOs; technical and financial organization to match physical delivery	H	Medium

Tasks/competences	Potential for discrimination (H high ; M Medium; L Low)	
Investment planning: in a long term planning process this includes forecast of future supply and demand situation, evaluation of necessary investment, cost/benefit analysis of individual investment projects; including its dimension, the dedicated track, seeking necessary permits	H	H
Decision to connect and specification of connection of a customer to the grid; this also includes connection charges as these are often related to specific costs of a project	H	H
Procurement of balancing energy (flexibility): market model to procure energy for ancillary services (auction, merit order)	Medium	High
Transparency: necessary information for the market as well as for the grid to work properly and to allow level playing field of all market participants; information management and timing	H	H
Capacity calculation: the calculation of physically available capacity is a task of optimization over the whole grid under control	H	H
Primary capacity allocation: scarce capacity has to be allocated under a market mechanism (e.g. market coupling, auctioning, open season and contract)	H	H
Congestion management: measures to alleviate congestion by counter trade, etc.	H	H
Tariff methodology: principles of cost calculation such as fair return on investment or principles for activation of maintenance work, benchmarking, allocation of cost to specific consumers, definition of deep and shallow connection charges; definition of entry and exit points and allocation of cost to these points	H	N/A if postage stamp system without incentive regulation
Cost and risk allocation between TSOs: contracts, etc in electricity this also refers to the ITC mechanism	H	H
Maintenance scheduling: defining the timetable and resources of planned maintenance work	H	Medium
Implementation		
Maintenance: actual maintenance work often done by subcontracting companies according to defined schedules; no discretion involved; if discretion is still possible, there will be potential for discrimination	No	No
Physical connection to the grid: actual physical connection of customer to the grid	Medium	Medium
Investment: execution of concrete investment project; no discretion involved; if discretion is still possible, there will be potential for discrimination	No	No
Management of linepack: part of flexibility which is provided by the TSO	Low	N/A
Real time operation of the grid: frequency control, pressure control	Low	Low
Dispatch: calling off capacity from specific producers in electricity or of specific storage providers in gas to compensate gas deficits	Low	H

Tasks/competences	Potential for discrimination (H high ; M Medium; L Low)	
Metering and Billing: information provision by network company; on the wholesale market level different than on retail; here we concentrate on wholesale	Low	Low

Regulators must have the competences to set standards for rules and decisions which are potentially highly discriminatory when it is necessary. Regulatory control of their implementation is also needed as the risk of discrimination still exists.

4.2.5 Justification for a “deep” ISO model

With the sole objective of minimizing discrimination, it follows that the optimum ISO model will be the deepest one i.e. the outcomes will be as close as possible to those of ownership unbundling where the ISO is as close as possible to an ownership unbundled TSO in terms of its functions and competences. However the ISO model involves unbundling of the network business itself, i.e. ownership from operation of the grid. It therefore introduces a new interface in the value chain which is critical and has to be properly regulated.

This deep ISO model also minimises the risk of discrepancies between network operation, maintenance and investment, as all three are performed by the same legal entity. Network operation must take into account maintenance operations and vice versa. Preventive maintenance is closely linked to daily network operation. A separation of these could result in network congestion, inefficient maintenance costly for network users, or in a default of maintenance, with some risks of a supply interruption or of an accident.

In this scenario the ISO would be responsible for the real-time operation of the network and all associated activities, as well as investment planning and maintenance. The TO would be responsible for financing the necessary investments, as identified by the ISO and approved by national regulators, on which they would earn a regulated rate of return. The TO would have an obligation to invest in compliance with a plan prepared by the ISO

4.2.6 Comparing a deep ISO model to ownership unbundling:

Potential conflict of interest

The TO, affiliated with supply or upstream businesses, will be interested in return on investment as well as in the overall economic success of the integrated company. It might therefore be the case that a “normal”, risk adjusted return on investment is not sufficient to finance a transmission project if the integrated company risks facing decreasing margins or even market shares. The TO can use his position as asset owner to delay or even prevent decisions or their implementation whenever the consent of the asset owners is necessary. This is especially relevant for new investment, as there the TO has a prominent position. The TO has in this model a monopoly to finance new investment.

As the ISO will have to operate and develop the grid it will in particular be responsible for fulfilling the legal obligations. This responsibility should therefore also be combined with legal liability for any failure to deliver or damage caused. However, as the ISO will depend on the legally anchored liability of TOs to finance investment there has to be a shared liability. This is particularly necessary as the ISO will not own major assets, so liability might be severely restricted by the mere fact that the ISO is only a service provider.

The same problem arises in relation to eventual incentive regulation regimes. It will not be the ISO, responsible for investment as well as maintenance, who will suffer from inefficiency but rather the TO.

Necessary contractual arrangements between TO and ISO

Conflicting interests means it is necessary to legally define detailed obligations for the interface between the TO and the ISO. The TO will be obliged to finance projects which are approved by regulators as long as an adequate return is guaranteed. In a more shallow model, in addition, very strict rules on the implementation of the ISO's decisions will have to exist.

Responsibility and liability issues also have to be covered by civil contracts between the TO and the respective ISO. Although these contracts do not guarantee delivery of requested tasks, they organize the burden sharing in the case of litigation and incentive regulation. Such contracts will have to be approved or be designed according to rules and standards previously determined/approved by regulators.

Necessary regulatory oversight

Regulators will have to oversee delivery of the tasks attributed to the ISO. This is not really different to the present situation of integrated TSOs. The difference would reflect the interface between TO and ISO where the regulator will have to monitor compliance of the TO, approve contracts in order to be able to establish an efficient regulation of network tariffs, and settle disputes between the TO and the ISO. Effectively, this would imply the regulators' deep involvement in the investment planning and approval process, whereas in case of ownership unbundled TSOs, this activity could be entirely left to the (fully independent) TSO.

A specific aspect of the new interface is the need to enforce regulatory decisions which are targeted at the ISO but need the co-operation of the TO. This might be necessary when a specific investment is mandated through a planning process and the interplay of TO and ISO results in unacceptable delay. There seems to be no clear response to this challenge, a conclusion which is supported by the experience of past ISO systems. Moreover, the negative experiences from the United State's ISOs/RTOs in electricity where not just investments are delayed but immense inefficiencies emerge in purchasing, maintenance, etc., show that the question of clearly defined responsibilities, processes and most important of all liabilities for investments will have to be resolved first if the ISO model is followed.

In the case of time critical processes the regulator has to be given the right to intervene and decide disputes or order a specific behaviour. This possibility results in the need to request detailed data and if necessary to issue penalties.

4.2.7 Regulatory Consequences of shallower ISO Models

A shallower ISO is often proposed because of certain difficulties of separating ownership from all operational tasks. Combining ownership with investment and even more operational tasks might have advantages to be balanced against the disadvantages in relation to discrimination. However, the allocation of operation with the TO brings about increased regulatory burden and potential discrimination.

The following table shows the implications for regulation if the corresponding task is transferred from the deep ISO to the TO. The regulatory consequences are therefore in addition to the regulatory implications of a deep ISO model. The categorization is made independently from existing regulatory measures already in place (eg. legal rules for the organisation of access to the system or congestion management, etc).

After a risk assessment items with high potential of discrimination but also those which are hard to regulate effectively are to be allocated with the ISO, low potential and easy to regulate items could be operated by the TO if advantages prevail.

Tasks/competences	Regulatory obligations (xxx high ; xx low ; x none)	
	Obligations	Comments
Access principles – grid code	xxx	<p><u>Risk:</u> if the principles are to be developed by TOs, they might propose biased standards, ie those which are not fostering new connection for instance of competing power stations</p> <p><u>Regulation:</u> the regulator has the right to refuse approval and to modify standards himself; still the challenge will be to foresee problems in the market e.g. resulting from vague formulations</p> <p><u>Conclusion:</u> These principles should in any case be adopted or approved by the regulator and proposed by the ISO (see directives)</p>
Market principles – market code	xxx	<p><u>Risk:</u> There is a high risk that standards will be biased to self procurement of energy for ancillary services. Also the pricing of services might lay extra burden on market entrants. The TOs might try to use these standards to foreclose the markets.</p> <p><u>Regulation:</u> The regulator would have to guarantee market based procurement and have to approve pricing schemes. He would have to force working systems to be set up which allow integrating markets. In order to do that he would almost have to entirely take over standardization.</p> <p><u>Conclusion:</u> These principles should in any case be adopted or approved by the regulator and proposed by the ISO (see directives)</p>
Security principles – security code	xxx	<p><u>Risk:</u> Security principles may for instance be used to reduce NTC values, ie. to separate markets by stipulating excessive standards on network security or on customers to the grid. Mainly relevant for electricity where it is indeed of high potential risk in particular concerning “cross-functionalities” (i.e. between the “market and security” areas) like balancing, congestion management, ancillary</p>

Tasks/competences	Regulatory obligations (xxx high ; xx low ; x none)	
	Obligations	Comments
		<p>services procurement, etc.</p> <p><u>Regulation:</u> As there is a long tradition of non binding standards (in electricity), it should be possible to approve an adequate security code.</p> <p><u>Conclusion:</u> These principles should in any case be adopted or approved by the regulator and could be proposed by the ISO (see directives)</p>
Real time operation of the grid including despatch	xxx	<p><u>Risk:</u> In order to stabilize the network system, energy has to be called off in a discretionary way. An integrated TO might prefer affiliated suppliers of this service.</p> <p><u>Regulation:</u> There is always some element of discretion present, so extensive ex post control of decisions has to be installed. This implies a very thorough analysis of dispatching decisions, where very often any non compliance with standards will not be obvious since the status of the whole grid as well as implicit assumptions might result in specific decisions. In gas the longer time horizon allows more transparency and therefore facilitates regulatory oversight.</p> <p><u>Conclusion:</u> Real time operation is very hard to oversee by regulators in electricity and should therefore be allocated with the ISO.</p>
Schedule management	xx	<p><u>Risk:</u> An affiliated TO might refuse to effectuate certain schedules because of conflict with existing contracts or the status of the system.</p> <p><u>Regulation:</u> This leads to case by case investigation, dispute settlement between shippers and TO; general rules would be necessary stipulating criteria of assessment of schedules. There is a necessity of liability according to civil law. In addition regulators would have to have the possibility to issue penalties. There might also be a dispute between the ISO who operates the system and the TO who does schedule management and decides about the possibility of commercial (and, in gas, physical) flows.</p> <p><u>Conclusion:</u> Case by case investigation is ex-post and therefore the damage to the European economy will already have happened. A separation of schedule management from real time operation does not seem appropriate.</p>
Procurement of balancing energy (flexibility)	xxx	<p><u>Risk:</u> The integrated TO might prefer affiliated producers or suppliers of this kind of energy. Furthermore the integrated TO might be prepared to pay any prices requested by the producer.</p> <p><u>Regulation:</u> Where possible the regulator would have to force market based and transparent mechanisms to procure energy. Problems arise where local monopolies exist because of network topology or lack of liquid markets. Then the lack of a cost based transparent market price might imply the need for regulated prices. In this case the regulator would have to collect cost from producers to evaluate adequacy of prices. This is also the case when an ISO is procuring energy but to a lower extent.</p>

Tasks/competences	Regulatory obligations (xxx high ; xx low ; x none)	
	Obligations	Comments
		<p><u>Conclusion:</u> Procurement of balancing energy is relatively easy to oversee. The question of pricing in non competitive situations arises in situations of an ISO as well as the TO. So procurement of balancing is something which can be handled by regulation.</p>
Management of linepack (gas)	xx	<p><u>Risk:</u> Depending on the rules of balancing the system in gas there might be a substitution between linepack and storage in specific hours.</p> <p><u>Regulation:</u> Clear rules for using linepack should eliminate most discretion and therefore reduce potential discrimination. However oversight is very difficult as it implies tracking the whole gas transportation system by the regulator, and the opportunity for rules that are not robust is considerable.</p> <p><u>Conclusion:</u> Although rules might reduce discretion to a high extent, assessing compliance with the rules seems to be reduced to specific cases of alleged discrimination.</p>
Transparency/ Information Management	xxx	<p><u>Risk:</u> In wholesale markets access to information very often is decisive for the economic success of companies. The integrated TO might share preferential information with the affiliated competitive business or refuse to provide necessary information to other market participants in a non discriminatory way (concerning time, cost or manner)</p> <p><u>Regulation:</u> Although it is quite easy to stipulate general rules of non discrimination it is almost impossible to comprehensively oversee implementation. Only ex post cases be assessed. The economic damage to competitors is however very difficult to assess. There is therefore a need for a combination of penalties according to public law and civil law litigation in order to establish adequate deterrence in advance.</p> <p><u>Conclusion:</u> The information management has to be done by those entities which primarily own or produce the information. Real time operation and knowledge of the status of the system, and knowledge about economic and contractual conditions dictate the allocation of this task. So even if the task itself would not imply major potential for discrimination, the use of available information leads to the conclusion that these tasks should be allocated with the ISO.</p>
Capacity calculation	xxx	<p><u>Risk:</u> Despite potentially existing rules the optimization of the grid still involves major discretion. The limited sphere of action of each TSO and the worst case assumptions of each TSO lead to a lower capacity level as if a single TSO calculated the capacity for the whole system. The different reasonable "local" interests of each TSO induce a reduction of available capacity.</p> <p><u>Regulation:</u> It is almost impossible to oversee every day calculation of available capacities. Only in the case of alleged abuse might the regulator check the accuracy of calculation ex post.</p>

Tasks/competences	Regulatory obligations (xxx high ; xx low ; x none)	
	Obligations	Comments
Capacity allocation	xxx	<p><u>Conclusion:</u> Capacity calculation is closely related to real time operation and should not be separated.</p> <p><u>Risk:</u> The TO might grant preferential treatment of affiliated shippers or traders.</p> <p><u>Regulation:</u> The allocation is quite easy to oversee by the regulator. A market based mechanism can be implemented transparently. The mechanism, however, needs regulatory approval concerning for instance the granularity of products, the required securities, etc.</p> <p><u>Conclusion:</u> Capacity allocation can be separated from real time operation and sensibly regulated. As long as the market mechanisms for capacity allocation are not efficient enough in the gas sector, this task should be left with the ISO for gas capacity allocation.</p>
Congestion management	xxx	<p><u>Risk:</u> The TO might not use all available means to alleviate the congestion and even when he does he might prefer affiliated producers, traders etc. Furthermore a TO might not efficiently reduce congestion by new investment in the long run.</p> <p><u>Regulation:</u> From the regulatory perspective this problem is similar to balancing energy. One additional aspect seems to be that real time control of the system might also be used to reduce congestion, which indicates that ex ante regulation can only cover some aspects, but not optimization of the grid concerning congestions. There would have to be clear optimization rules (what to optimize, physical flows, value of flows,... etc). However only individual cases can be assessed which require a lot of data. Ex-ante enforcement is therefore not possible (real time operation). A sensible deterrence will have to be established by litigation and penalties in case of abuse.</p> <p><u>Conclusion:</u> Although similar to balancing energy, congestion management is more related to real time operation and should therefore not be separated. For gas, congestion management should not be separated from capacity calculation and should be allocated with the ISO.</p>
Tariff methodology	xx	<p><u>Risk:</u> The TO might establish a tariff system which discriminates against new producers (connection to the grid, usage fee). Furthermore, in an integrated company excessive fees still remain in the company whereas competitors face additional costs.</p> <p><u>Regulation:</u> Tariffs are to be regulated anyway and the methodology approved by regulators. However, the potential for incentives to discriminate warrants additional diligence not only on the level of tariffs but also on the tariff structure. Discrimination concerning the tariff structure is in general hard to assess. The potential for discrimination might warrant a deeper level of regulation extended to the very structure of tariffs.</p> <p><u>Conclusion:</u> Calculation of tariffs will be very difficult in a system of separated tasks. Shifting specific operational</p>

Tasks/competences	Regulatory obligations (xxx high ; xx low ; x none)	
	Obligations	Comments
Cost and risk allocation between TSOs	xx	<p>duties to the TO will aggravate these difficulties further.</p> <p><u>Risk:</u> Bearing in mind the experience with a “battle” on achieving an agreement between the TSOs on a common ITC model according to the Article 8 of the Regulation (EC) 1228/2003 it appears prohibitive to transfer this duty from the ISO to the TOs. It could be expected that the conflict of interests between the TOs would be even heavier than the one between the TSOs, since the TO would bear less responsibility (as the part of the TSO duties will be transferred to the ISO) but still remain equally “eager” to obtain as much money as possible from the common fund.</p> <p><u>Regulation:</u> Regulatory oversight would also become much more complicated if transferred to TO.</p> <p><u>Conclusion:</u> Could not be transferred without transferring contract management. This transfer would require a stronger control of contracts and invoices.</p>
Maintenance scheduling	xxx	<p><u>Risk:</u> The TO might discriminate producers and shippers when organizing the maintenance schedule as well as by disclosing information on the schedule to affiliated companies.</p> <p><u>Regulation:</u> Organisation by the regulator of a dialogue with shippers and producers to optimise the maintenance time schedule is necessary. There might be a need to set rules on how to prioritize different alternatives. Installation of a dispute settlement between market participants and the TO will be necessary.</p> <p><u>Conclusion:</u> Regulatory oversight can hardly deliver especially concerning disclosure of information.</p>
Maintenance	x	<p><u>Risk:</u> Low risk if given precise schedules the TO does not have any discretion in undertaking the maintenance. Delays to the benefit of related companies might still be possible, although this covered under transparency and information management.</p> <p><u>Regulation:</u> no specific regulation needed. The TO will have to follow the rules on public procurement</p> <p><u>Conclusion:</u> A separation of maintenance scheduling, including all discretionary elements, from effective maintenance work is possible.</p>
Connection to the grid	xx	<p><u>Risk:</u> The connection to the grid at the level of a TO is normally a specific project and therefore involves discretion even if standards exist. The integrated TO will still have an incentive to discriminate competing producers or to try to force industrial customers to contract with their affiliated company in return to a “generous” connection project. This is the situation in many Member States so far.</p> <p><u>Regulation:</u> As the situation differs case by case, connection projects are hard to oversee and discrimination is difficult to gauge in practice. Dispute settlement between TO and customers to the grid will be necessary with the possibility of penalties in the event of discrimination. Fast decisions by regulators, with the possibility to order the realization of a specific project are necessary to guarantee that economic outcomes are realized. Questions of cost can be solved by litigation ex post.</p> <p><u>Conclusion:</u> Connection to the grid is related to other investment decisions and should therefore not be separated from the unit responsible for investment planning.</p>

Tasks/competences	Regulatory obligations (xxx high ; xx low ; x none)	
	Obligations	Comments
Investment planning	xxx	<p><u>Risk:</u> Investment planning is one of the central competences of a network company. A TO can discriminate by not investing in interconnection or not reinforcing the capacity in the grid. Investment planning dictates long term capacity as does to a certain degree maintenance planning. On the other hand allocation of this task with the TO eliminates the interface between ISO and TO concerning investments as planning and financing would be in the same company.</p> <p><u>Regulation:</u> The regulator would have to approve the investment plan and have the possibility to force the TO to invest in a specific project. This leads to potential questions of liability and risk allocation and may also be in conflict with incentive regulation. The regulator would finally, in this scenario, take over the role of the ISO as he mainly controls investment.</p> <p><u>Conclusion:</u> The investment planning should in all cases be with the ISO.</p>
Investment	x	<p><u>Risk:</u> The TO might delay the realization of the project.</p> <p><u>Regulation:</u> The ISO would have to bear the regulatory risk of postponement of the project and pay penalties as well as being liable for any delay. The contract between the ISO and the TO would have to foresee the method of how the TO would have to cover the incurred cost.</p> <p><u>Conclusion:</u> Delivery of investment projects (laying pipes or wires) is in principle an activity which can be outsourced. Potential penalties are a usual element in contracts between the partners to the contract. Investment can therefore be separated from investment planning.</p>

4.2.8 Geographic extent

In addition to helping to address concerns about discrimination, ISO models offer an institutional means of simplifying the interactions between national networks. However, the development of regional ISOs addresses different issues to the essential issue of unbundling and should be seen as an addition to effective unbundling, not a replacement for it.

The allocation of responsibilities to an ISO is not necessarily restricted to present grid geography. There is no “natural” presumption that the current number of TSOs is equal to the appropriate number of ISOs. Indeed, in the context of the secondary objective listed above, the optimization of the operation of the integrated grid, it might be preferable in the future for regional or even EU-level ISOs to emerge. Regulation should however oblige TSOs to harmonize their rules for accessing the networks and to provide a system which ensures optimal use of the European grid. A regional or European ISO could be an organizational solution to that end. That said, however, it will still be important for the regulatory framework to manage the interface between ISOs and ensure practical co-operation. Some considerations in this regard include:

One ISO per TSO

This might reduce the scope for discrimination as certain operations - depending on the “deepness” of the applied model - are transferred to the ISO which is independent from competitive interests. However it is certainly not optimal with respect to use of infrastructure. ISOs will have to be co-ordinated on a national scale as well as on European scale on matters such as investment, calculation of available capacity and allocation of capacity. Furthermore this would make necessary the establishment of a considerable amount of new companies, but would not have any impact on the labour market since the ISO would be obliged, through European legislation, to hire the personnel in charge of the activities transferred from the TSOs. This model seems to be the most expensive and at the same time the least effective model envisaged.

National ISO

In some cases a model with a national ISO will already mean combining the activities of different TSOs under one umbrella, whereby the potential for discrimination is further reduced. In addition, such a model will integrate several TSO areas into one area combining in principle conflicting interests (on a national scale) into one company. This would result in a situation where the grid is used more effectively. However, congestion will presumably still be allocated at national borders, and co-operation with other national ISOs will have to be organized. In addition, there might be a difference between countries with many TSOs and those with only a few or even only one. In the latter case the first two geographic ISO models are in fact the same. In regulatory terms this “national ISO” model may still be essentially based on national implementation and national regulatory oversight.

Regional ISO

A regional ISO controls the grid in a “supra national” region, potentially a major part of the European Union. In electricity and gas the regional ISO has the means to choose from alternative transport routes and to allow shipping contracts which are not possible if only calculated for every TO separately. The regional ISO may also be able to reduce necessary security margins in electricity when calculating the NTC at specific borders as the ISO has the overall responsibility for the security and reliability in the whole region. Furthermore the regional ISO may be instrumental in harmonizing market rules. The regulatory oversight of such a body will quite naturally be allocated with a European regulatory body such as ERGEG^{plus} if this is feasible within the framework of EU law. Improving market integration through a regional ISO model does not remove the need to resolve the EU’s deep seated problems of undue discrimination on the part of vertically-integrated companies. Effective unbundling would have to be a pre-requisite of any regional ISO model.

4.3 Conclusion Ownership Unbundling vs ISO

It appears from the abovementioned analysis that, for discrimination purposes, there are no decisions and only a minimal number of tasks that could be left to a non-independent network operator. The extent that tasks can be delegated to a vertically-integrated transmission owner depends on the level of possible discretion they would have ie. or how precisely the decisions of the ISO are defined. Nevertheless, any delegation of tasks or decisions to the TO will raise questions of enforcement, and potentially of dispute settlement and of litigation cases.

Therefore the distinction between an ISO and ownership unbundling is essentially restricted to who owns the assets and pays to develop them. The ISO model, however, adds to ownership unbundling the risk of conflicts arising as regards investing and sharing the profits resulting from transmission activity between the operator and the owner of the assets, without any benefits for the network users.

The implementation of an ISO model will need strong regulatory oversight in order to reach the objective of a non-discriminatory network operation. The regulators will have to be involved in the control and approval of complex processes, e.g. contracts, dispute settlements, etc. at the micro level of the ISO and TO.

A shallower ISO model on a regional level might however be considered with respect to dimensions other than discrimination such as optimization, market integration or incentives for investment on European level – although this should be complementary and not an alternative to effective measures to prevent discrimination.

5 Storage unbundling

The Directive 2003/33/EC stipulates that Member States have to introduce third party access to storage facilities. The Member States may choose between a regulated and a negotiated access to gas storage, in view of the fact that some competition might exist between storage capacities offered by different operators, or between storage capacity and other means of facing sales modulation. Discrimination is prohibited for all kinds of storage independently of the extent of competition in the market. Flexibility of long term contracts is not sufficient, at a competitive cost, to face the peaks of consumption in winter. Local production flexibility and/or underground storage is then necessary.

When local production declines, the suppliers cannot do without underground storage capacities. It becomes crucial that new comers on the market get storage capacities and therefore that these capacities are allocated in a non-discriminatory way. Storage should therefore be effectively unbundled from supply and production activities, based on the existing model of legal unbundling.

6 DSO unbundling

ERGEG has regularly reiterated that the present regulatory framework for legal unbundling is too vague and needs further binding clarification. Current provisions require separation of activities within integrated groups and guarantee a non-discriminatory decision-making process. The provisions include management separation, accounts separation and legal separation. Information unbundling and financial ring-fencing are not explicitly required. The definition of the detailed elements of informational and functional unbundling would be along the lines of the draft GGP, which are under public consultation until 26 June 2007. These GGP will be applicable to both TSOs and DSOs that are vertically-integrated, and should facilitate more effective unbundling in the interim whilst new legislation is negotiated.

The framework of the Directives 2003/54/EC and 2003/55/EC has merely been transformed verbatim into national law. No Member State has filled out the framework into a comprehensive system that is practicable for regulatory enforcement and monitoring. The main insufficiencies are:

- The Electricity and Gas Directives provide that: “those persons responsible for the management of the TSO/DSO system operator may not participate in company structures of the integrated electricity/gas undertaking responsible, directly or indirectly, for the day-to-day operation of the generation, transmission and supply of electricity”. To what extent a network director can work at the same time for a holding company or to which management levels this obligation applies, what the meaning of “participation” is and where the line between day-to-day and strategic operation lies, must currently be decided on a case-by-case basis.
- The Electricity and Gas Directives provide that: “appropriate measures must be taken to ensure that the professional interests of the persons responsible (...) are taken into account in a manner that ensures that they are capable of acting independently.” It is the regulators’ understanding that this implies that the salary of network management must not be based at all on the holding/supply companies performance and the independence of management must be manifest in the companies’ bylaws and charter. The definition of “appropriate measures” in detail lies with the company and would have to be enforced individually by regulators.
- The Electricity and Gas Directives provide that: “the operator shall have effective decision making rights, independent from the integrated electricity/gas undertaking, with respect to assets necessary to operate, maintain or develop the network.” This, being the key obligation for independent networks within integrated undertakings, is short of any obligation to provide enough human and physical resources for defined core competences of a network operator to carry out its work and decide independently from other parts of the integrated company. This includes having enough resources to prepare decisions, to evaluate alternatives and to be assisted by external consultancy. “Back-sourcing” of all functions back into the mother company is unlimited and well practiced in the industry. Only a minority of undertakings have transferred the network assets into the new legal entity which often leaves those network companies as a rather empty shell.
- The Electricity and Gas Directives provide that: “the TSO/DSO shall establish a compliance programme (...) and ensure that observance of it is adequately monitored. The programme shall set out the specific obligations of employees to meet its objectives (...).”
- While the objectives of the compliance programme should be more specific and could be integrated into a broader scope of compliance obligations on the companies, the person or body responsible for monitoring the compliance programme has a very weak standing within the company. It is necessary to provide the compliance office with adequate independency to fulfil its tasks.
- The Electricity and Gas Directives provide rules on information unbundling only under a “confidentiality” headline. Equal access to information remains the key to non-discrimination within the network and for fair competition in markets dependent on network information. Yet under current experience in most Member States more transparency of information leads to constant discussion and legal disputes with network operators. The adequate supervision of the functioning of a “Chinese Wall” is

virtually impossible in the given legal framework. Improved legislation must address this issue.

It is the regulators' understanding that within the monopolistic market, i.e. the network, no confidential business information exists. Therefore full transparency should be the basic principle laid down in the legislative framework. Any exception to this principle needs to be justified by the network operator. For remaining information obtained in the course of operating the network, rules for information unbundling including powers to standardize business process modelling are necessary.

Affiliations between the network operators and participants in the market (where the TSO/DSO may share a significant common shareholding with generators, gas producers, shippers, suppliers or even large consumers) are likely to raise concerns that the system operator will be biased in favour of its own affiliated interests. This conflict remains as long as the affiliation exists. Short of this basic concern the improvement of the present legal and regulatory framework for unbundling is precondition to effective unbundling in sectors where ownership unbundling may seem disproportionate.

It has to be noted that in most cases the present paper refers to TSO unbundling. DSO unbundling is also a problem given that discrimination is a major issue in distribution too. However the potential effect of discrimination is regionally more restricted and mainly confined to final customers and generation units connected at the distribution level. Discrimination may reduce switching, and may allow vertically integrated incumbents to enjoy dominant market positions in local markets by reducing the responsiveness of customers to high retail margins. It will also impact on the potential entry of suppliers from other countries as well as direct sales to end users from other countries. However, apart from this the deficiency does not propagate directly to other regions or even other Member States, unlike the TSO level, where discrimination may distort investment, dispatch and prices across borders.

Therefore ownership unbundling or the establishment of an ISO are not warranted at the DSO level. They are also more difficult to imagine in a unique model for Europe: the organisation of distribution is very different in the different Member States, and, in some cases, the assets do not even belong to the DSO but to local authorities. That is why the regime provided for in Directives 2003/54/EC and 2003/55/EC, clarified and reinforced by a new Regulation and/or Guidelines for Good Practice stipulating legal unbundling with strong regulatory oversight (including of network related services), might be the best choice for the distribution grid. Especially such behavioural rules need very detailed provisions and sufficient monitoring and enforcement powers of regulators.

Annex 1: Position Paper on the (different) treatment of unbundling in the electricity and in the gas sector

I- Background

The European Commission launched a Sector Inquiry into the European energy markets in June 2005. The final results were presented in January 2007. One main finding of the Energy Sector Inquiry was that the current level of Unbundling of network and supply interests has negative repercussions on market functioning and on incentives to invest in networks. This is seen as a major obstacle to new entry and also as a threat to security of supply. The same conclusion can be drawn from the ERGEG Assessment of the 2006 national reports, which found insufficient unbundling as the most persistent barrier to competition. While it is beyond doubt that effective unbundling is a key to functioning energy markets, the European Commission invited ERGEG to assess the question of whether there is any reason to treat electricity and gas differently with respect to unbundling.

Building on the work of the ERGEG Assessment of the 2006 national reports and the results of the energy Sector Inquiry, the ERGEG analysed whether any differences between the electricity and the gas sector with respect to the relevance of the involved parts of the value chain justify a different treatment as regards unbundling. For this purpose, we first give a short overview of the key features of the European electricity and gas value chains then focus in a second step on the potential for discriminatory behaviours resulting from insufficient unbundling. We then assesses whether practical differences between both sectors might justify a different treatment with respect to unbundling.

II- Key features of the European value chains for electricity and gas

Both the gas and the electricity value chains involve activities in monopolistic, partly competitive and competitive fields. European electricity and gas sectors are mainly national in focus. While the whole value chain of the electricity sector is present within the boundaries of the EU, in most cases even within each single EU country, approximately 60 % of the production part involved in the European gas value chain is located outside the EU. Thus the entire electricity value chain is subject to European regulation and/ or legislation while a decisive part of the gas value chain is exempted from it. In addition to this regulatory and legislative difference, there is also an important issue in terms of security of gas supply. Declining gas reserves located in the EU and increasing level of gas consumption will result in growing dependency on gas imports from non-member countries. A first difference between gas and electricity therefore lies upstream: electricity production is performed by a number of actors, all of them inside the European Union, whilst gas producers are few, and often located outside the European borders, with Russia and Algeria particularly important.

While only the transportation and the distribution activities are characterized as natural monopolies and thus regulated, the remaining importing, generation, trading and retail activities are in principle open to competition.⁴ Gas storage is not open to competition in the same way in all the Member States. Although competition does exist to a certain degree, it can be said that each segment of the electricity and gas value chain is dominated by market players who are part of vertically integrated energy undertakings.⁵ Vertical foreclosure in the gas sector is not only a result of vertical integration but also of long term contractual agreements in the import, the storage and the wholesale segments of the gas value chain. Future developments in LNG markets might bring some positive changes into the degree of vertical foreclosure in the gas markets and reduce dependency from the two main suppliers. A further difference between gas and electricity is that some discrimination in electricity results from the choice of the producers to balance the network, whilst for gas balancing does not rely on outside suppliers.

It is also important to note that the gas and the electricity sector are interlinked since gas is a necessary product for marginal electricity production. The price developments in the wholesale and retail segments of the electricity value chain do not only influence the generation market (new generation capacities) but also the demand for gas as a production input in the electricity generation process. When price levels for CO₂ certificates exceed a certain threshold gas based electricity generation becomes, to some extent, an economically viable alternative to coal based electricity generation. The price developments on both markets will influence the long term consumption behaviour of customers.

The description of the European value chains for electricity and gas clearly shows the similarities between the two sectors with respect to vertical foreclosure, except for production. The following section focuses on the main discriminatory behaviours resulting from vertical foreclosure and thus insufficient unbundling.

III - Main discriminatory behaviours as a result of insufficient unbundling

The findings of the European Commission in their Sector Inquiry and the experience of European Energy Regulators demonstrate that insufficient unbundling of networks leads to discriminatory behaviour towards non affiliated companies. The potential for discrimination is present at all levels of the value chain. The following table gives an overview of the main discriminatory behaviours found by the Sector Inquiry in the European gas and electricity sectors.

⁴ The opening of the retail markets for gas and electricity for household customers will be achieved in all EU Member States by July 1st 2007.

⁵ The level of vertical integration is less pronounced between the exploration business and the remaining activities lower in the gas supply chain. This is basically due to the fact that exploration activities are too specific to bear great synergy potentials when performed within an integrated gas undertaking.

Discriminatory behaviour	Gas	Electricity
<p>1. Preferential treatment based on linkages between supply and transmission activities within a vertically integrated undertaking.</p> <p>Linkages lead to incentives for these companies to exercise preferential treatment of their own upstream and downstream branches as compared to third parties (e.g. investments in network only when it is in the interest of the firm as a whole, substantive transportation fees rebates, raising rivals' costs, price squeezes, withholding essential information, providing the information only to affiliated companies).</p> <p>Preferential treatment based on linkages between production and transmission activities within a vertically integrated undertaking.</p>	<p>✓</p>	<p>✓</p> <p>✓</p>
<p>2. Preferential access to information:</p> <p>Top management of the supply company often have access to strategic business information (market shares, available capacities, etc.) of the affiliated network companies (transport and distribution), either directly or as a result of their representation in the Supervisory or Administrative Board of the latter.</p>	<p>✓</p>	<p>✓</p>
<p>3. Discriminatory behaviour with regard to investment decisions taken by the integrated energy companies:</p> <ul style="list-style-type: none"> - Certain investment decisions on network extensions of the transport company have to be approved by an investment committee of the parent company. - In a number of cases, companies have only invested in capacity expansions if their affiliated supply companies had previously confirmed their interest for the bulk of the extra capacity. By contrast, the investment did not take place if the interest in extra capacity merely stemmed from competitors. - The incentives for TSOs to increase the capacity of their interconnectors are low, given that congestion benefits the vertically integrated company, which itself tends to have sufficient long-term reservations. - Lack of adequate investments into interconnectors, use of allocation procedures that do not bring about maximum use of interconnector capacity, long-term capacity reservations in favour of incumbent operators. - A particular problem is related to the lack of incentives for vertically integrated TSOs to remove bottlenecks in the network (most prominently at cross-border points), if these bottlenecks are assumed to favour the supply branches of the network operator. - The level of investment into the expansion and connection of the transportation networks particularly impacts on the level of cross-border trade. The effective joining together of national networks into an integrated European grid is essential to European security of supply, as therefore is investment and effective unbundling. 	<p>✓</p>	<p>✓</p>
<p>4. Discriminatory conduct of DSOs with respect to the access to their network to non-affiliated suppliers</p> <p>Discriminatory conduct of DSOs with respect to the access to their network in switching procedures.</p>		<p>✓</p> <p>✓</p>

Discriminatory behaviour	Gas	Electricity
5. Cross border activities: Independence from the parent company if the network company in one Member State (MS) remains under “control” of the related supply/generation company in another MS. Especially in those cases where the related supply company is incumbent in the neighbouring market there is a conflict of interests when improvement of the TPA-regime on a pipeline system necessary to supply the incumbent’s home market is required. Art 9 of Directive 2003/55/EC also applies to cross-border related activities. According to Art. 25 (1e) of the Gas Directive regulatory authorities should monitor effective unbundling. However, due to their competences being restricted to national activities regulatory authorities are unable to monitor cross-border related unbundling. Therefore cross border activities are established in a way that undermines the purpose of Art. 9 of the Gas Directive.	✓	
6. Systematic discrimination of third parties: <ul style="list-style-type: none"> - Access to available firm capacities on transit routes - Requirement for independent shippers to offer financial guarantees 	✓	
7. Grid connection for new power plants: When the network is owned and operated by vertically integrated electricity companies, the TSO is unlikely to have an incentive to connect potential competitors in the generation/supply business to their network.		✓

Source: Sector Inquiry 2007

It is clear that vertical integration across the competitive and monopolistic aspects of the value chain creates a potential for discrimination, which impacts on competition and security of supply. This fact holds true for both the electricity and the gas sector, thus there is a *prima facie* case for effective unbundling in both.

At this point it is important to mention, that the results presented are based on the conclusions of the sector enquiry (final report published in January 2007) by the European Commission. Since then improvements in terms of reducing discrimination have been made in most EU countries. The case made here by the Sector Inquiry is that discrimination exists, or at least potentially exists, where networks are integrated in both gas and electricity. Therefore the question to address here is not whether they should be treated similarly despite the differences we have observed in the value chains, but rather whether any of those differences challenge the presumption of equal treatment.

IV- Differences between the electricity and gas sectors which might challenge the presumption of equal treatment with respect to unbundling

The fact that an increasing part of the strategic exploration segment involved in the gas value chain is located outside the boundaries of the EU has to be identified as the main difference between the gas and electricity sectors. The EU will become increasingly dependent on non-EU countries to ensure its supply of gas. EU countries will face an oligopoly of supply. The bargaining power of gas importing companies might become less and less important with the increasing number of potential suppliers, mainly through LNG, nevertheless dependency on the two main suppliers, Russia and Algeria, will remain very high for the coming years.

This raises the question of whether the current or future unbundling provisions might weaken this bargaining power and if so, whether it justifies a less rigorous approach to unbundling for gas.

With respect to the enforcement of the current unbundling provisions the clear answer is no. An effective unbundling of operation, information and accounts of the network activities is a precondition of open and competitive European energy markets. As it is the case that most importing companies are part of vertically integrated energy undertakings, the unbundling provisions are necessary to prevent potentially discriminatory behaviours towards non-affiliated companies. In so far as the ownership of the networks remains untouched, any downgrading of the vertically-integrated energy undertakings due to such a regulatory framework is, in fact, welcomed, since consumers will not accrue any benefits from the monopoly based income of companies. In other words: the rate of return of an energy undertaking may decline as a result of the successful regulation of equal network access and efficient network tariffs.

However, in order to resolve the systemic conflict of interest inherent in the vertical integration of competitive and monopolistic activities, the European Commission is also currently discussing the necessity of reinforcing the present level of TSO unbundling, through either a full ownership unbundling or an independent system operator approach. In the case of full ownership unbundling, the vertically integrated energy undertaking would sell its main asset. Depending on an asset or profit based credit rating and on the way the value of the sold asset is re-invested, one cannot exclude a deterioration of the credit rating of the former vertically integrated energy company. It is therefore difficult to ascertain what short to medium term impact such unbundling will have on the bargaining power of the affiliated importing arm. It can be assumed that gas exporting countries are looking for reliable importing counterparts in order to export their gas on long term contractual agreements. The European gas importing companies therefore need to be reliable and financially strong partners to maintain their bargaining positions. This can be achieved with full structural unbundling which should not impact on their bargaining power of the EU's importing sector, but some sensitivity and time may be needed to manage the transition from vertically integrated gas undertakings to full ownership unbundling. Thus this central difference in the gas supply chain does not challenge the shared target of ownership unbundling in both gas and electricity with respect to present and future unbundling provisions, but it might require additional sensitivity in determining a path to reach the desired outcome in gas.

It is also important, however, to avoid unnecessary delay in reaching this important policy outcome. As we have seen, the EU's long term security of supply will also be influenced by the growing import diversification and through future developments on the LNG capacities in Europe. By providing clearer market signals and clarifying the incentives on the investment decisions of network operators, structural unbundling should facilitate and increase this process; and where there is non-discriminatory access to the EU's pipes exploration companies might feel more able to explore and sell upstream gas.

V – Conclusion

This paper very briefly describes the electricity and gas supply chains, looks into the potential for discriminatory behaviours resulting from insufficient unbundling at all levels of the value chain(s), and draws the first conclusion that there is **a strong case for effective unbundling in both the electricity and gas sectors.**

Building on the presumption of equal treatment between gas and electricity the paper further explored whether there are any differences between the sectors which might challenge this presumption. One difference, the growing dependency on gas imports from countries outside the EU, was addressed as potential challenge, nevertheless, does not justify a different target for the level of unbundling in gas. The second conclusion drawn by **EREGEG is therefore that the differences existing between electricity and gas do not justify a different definition of unbundling, nor reduce its importance.**

The third conclusion, however, is that the **treatment might be different in gas and electricity in terms of the means to reach the same target.** Extra sensitivity (e.g. in terms of the time to *implement* ownership unbundling) may be needed in gas because of the need to avoid creating uncertainty in ongoing negotiations, although it was also noted that ownership unbundling does not in itself necessarily weaken bargaining power.

If the European Commission opts for a full ownership of TSOs as a future solution to the systemic conflict of interest inherent in the vertical integration of competitive and monopolistic activities, it will have a deep impact on the structure of the existing companies. In this context, for the gas sector in particular it would be necessary to consider some pre-requisites, namely 1) procedures for allocating capacities and 2) procedures to favour investment such as open seasons.

Therefore, **although the same level of unbundling is required in both electricity and gas (in principle, ownership unbundling), some additional care might be necessary for gas in relation to ongoing negotiations and e.g. the time allowed for implementation in Member States.** These issues are less relevant for electricity companies, as the supply side is not directly affected by the unbundling provisions. In any event, such considerations should not warrant unnecessary delay in reaching, as soon as possible, the required policy outcome of effective unbundling in both gas and electricity, given its importance to competitiveness, investment and therefore security of supply.

Annex 2: Potential ISO/AO models

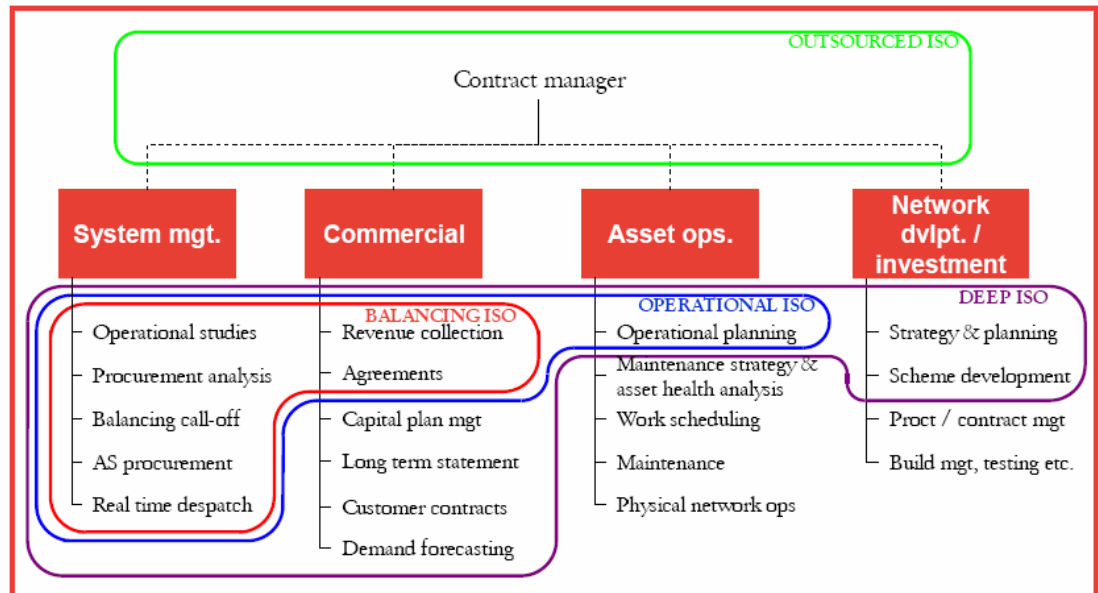


Figure 3: Potential ISO / AO models

Source: Frontier Economics

Annex 3: Case Studies

Preliminary consideration about ownership unbundling versus independent system operator model in the experience of some Member States

Though among all the Member States less than ten have applied ownership separation of transmission from the incumbent and, in most of the cases, only a few years have passed since then, some preliminary reflection can already be undertaken, not to be considered as a final assessment.

As a general consideration most of the Member States' regulators that deal with ownership unbundled TSO(s), seem to agree that **ownership unbundled TSO(s) reduced the time needed for planning, instructing authorization process and realizing the investments.**

Theoretically ownership separation effects on competition in the sectors, in terms of removal of network bottlenecks and independence from the suppliers, can be replicated by an Independent System Operator that, even if it does not own the assets, dispatches and plans the investment in the network (ISO/TSO model). Some of those regulators that first implemented the ISO/TSO model in their own country agree that **conflicts between the owners of the asset and the system operator are difficult to manage.** The principal/agent economic theory, that offers a model that can be referred to for similar circumstances, point out that the ISO (principal) will face transaction costs to ensure that the TSO(s) (agent) makes all the efforts necessary to realize his orders, since the TSO(s) interests, as part of the vertically integrated undertaking, are inclined to diverge from them. On the other hand the ownership unbundling not only is not affected by these transaction costs, but seems to have a positive impact, at least in terms of timing, on investment.

Case study: Italy

Italy originally introduced an Independent System Operator model model, in transposing Directive 96/92/EC by Legislative Decree 79/1999 which envisaged the following separation of the activity:

- operating and planning the development of the national transmission grid was entrusted to an ISO (GRTN), a public operator fully controlled by the Ministry of Economic Affairs and Finance;
- ownership of network infrastructure and related activities, such as lines construction, remained in the hands of operators.

Italy's model envisaged the coexistence of an ISO (GRTN) responsible for transmission, dispatching and planning grid development activities and many TSOs (of which Terna, fully owned by the incumbent ENEL, being the most important one) responsible for operations, maintenance and development activities related to the national high-tension network according to orders given by the ISO (GRTN).

Since the ISO (GRTN) was responsible for dispatching and was not directly related to the incumbent it was supposed to have the most neutral view point on the transmission grid and was involved in network development by drawing an investment plan, in accordance with the Ministry of Industry. It was the intention of the Legislator that this would have made it able to detect and remove congestion caused by bottlenecks. The investments necessary to develop the network, planned by the ISO (GRTN) should have been realized by the TSOs, and follow a tender procedure in order to have them done at the best price.

However, in the model adopted in Italy, inherent inefficiencies and difficulties emerged in the coordination between the operator and owners of the grid. This led the government to “re-bundle” together the transmission system ownership and operation, a process that took effect in November 2005 with the creation of Terna – Rete elettrica nazionale S.p.A.

Since 1 November 2005 Italy's transmission grid has been operated by Terna, Italy's transmission operator. Terna is now a listed company whose main share-holders are Cassa Depositi e Prestiti (29,9%), ENEL (6%), Assicurazioni Generali (5%), each of the other shareholders owing less than 2%. It should be noted that Cassa Depositi e Prestiti also owns 10.25% of Enel's share capital. Italy's Competition Authority opened an inquiry on 22 June 2005 aimed at approving the merger between Terna and GRTN and requested Cassa Depositi e Prestiti to dismiss its stake in Enel within 24 months starting from 1 July 2007.

Even if the effects of the TSO ownership unbundling in Italy will be fully measurable only in the following years some changes can be already mentioned:

- in comparison with ISO/TSO previous investment plan, for the following 4 years the brand new investment plan shows an increase of 30%;
- the number of authorizations obtained doubled in the last three years, partially due to the ISO/TSO;
- more investments were planned in the Southern regions and islands where most of the bottlenecks are located and new generation capacity is expected;
- strong operational expenditure reduction, partially due to in-sourcing of GRTN.

Case Study: British Electricity Market

This study focuses on the British Electricity market, due to the recent implementation of an ISO in Scotland. There is also an ownership unbundled TSO for the British Gas market. A case study can be produced for this market, if required.

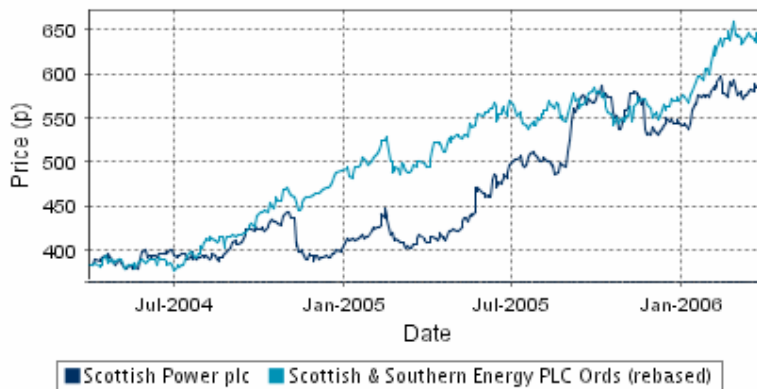
The GB electricity market currently has both an ownership unbundled TSO system (in England and Wales) and an ISO system (in Scotland) in place. An ownership unbundled TSO was created in England and Wales in 1995. This company, National Grid PLC is licensed. There were two vertically integrated companies in Scotland until 2005. In April 2005 the operation of the Scottish transmission assets was transferred to National Grid PLC, thus creating an ISO for Scotland.

Responsibilities

National Grid is obliged to offer terms for connection and use of the GB transmission system in accordance with the Connection and Use of System Code and its transmission license, both of which are approved by the Gas and Electricity Markets Authority (the Authority or OFGEM).

When National Grid and an applicant fail to agree on connection or use of the transmission system, either party may apply to the Authority to settle the dispute. The transmission system owners are responsible for maintenance and investment in the grid. The amount of investment system owners can make is set by OFGEM's Transmission Price Control Review. The relationship between the system operator and the system owners is governed by the System Operator – Transmission Owner Code, which is approved by the Authority.

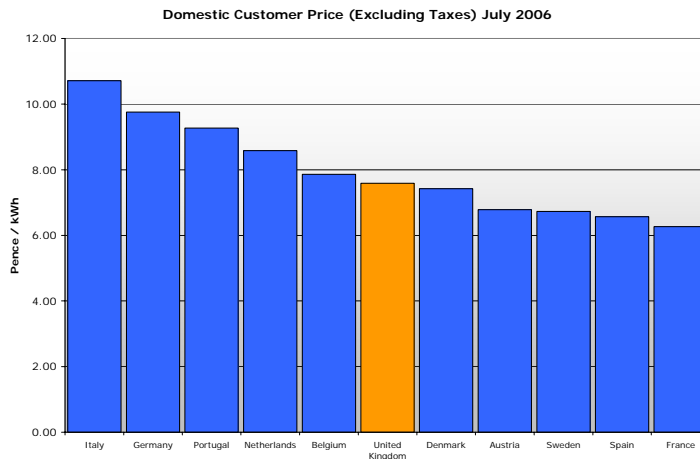
The separation of the SO functions from the vertically integrated functions was achieved through legislation. The legislation enabled the regulator, OFGEM, to change the licences of the vertically integrated company, to establish the licence for the ISO, establish a new regulated code which regulated the relationship between the ISO and the transmission asset owners (TOs). The position of ISO was established following a tender process in which the successful bidder was National Grid. Investments in the network in the coming 5 year price control period are planned to be £10 billion. Grid reliability is now 99.9997% - among the highest in Europe. Transmission charges are locational and since the establishment of the British market have been harmonised across GB.



Graph 1: Scottish Transmission asset owners share prices April 04 – March 06⁶

⁶ Source: London Stock Exchange

There is a drop in the companies' share prices prior to the introduction of the ISO, though this follows the trend for the Electricity sector. Prices in Britain for domestic customers remain among the lowest in Europe.⁷



Comparison of the British ISO and ownership unbundling models

The ISO model which is in place in Scotland has enabled a single British wholesale market for electricity to be established with common rules for access to the networks and a single set of imbalance prices. However, compared to the ownership unbundled arrangement in place in England and Wales the model has a number of disadvantages:

- Congestion costs are higher relatively. This is partly because the TOs are responsible for investment in new infrastructure whilst the ISO is responsible for congestion management. This division of responsibilities makes it more difficult to reach an optimal solution between investing to relieve congestion and the management of congestion through redispatch. There are also concerns that the ownership of generation plant by the TOs gives unhelpful incentives.
- The interface between the ISO and the TO companies is complex and must be closely regulated. The regulated code used for this purpose extends to over 200 pages. It is therefore relatively costly.

Case Study: Portugal – Transmission Network Unbundling

In the ongoing debate regarding network unbundling, the opinion is often expressed that vertically integrated companies have more complete information, leading to better decision-making regarding investments and ensuring better outcomes on safety and quality indicators. The experience from Portugal suggests otherwise. Comparable data are available for the 13-year period 1994-2006, a period that includes one year of vertical integration, 5 years of legal unbundling and 7 years of full (ownership) unbundling. In 1995, the transmission network of the incumbent EDP was legally separated but maintained within EDP in terms of ownership

⁷ Source: DTI : <http://www.dtistats.net/energystats/qep561.xls>

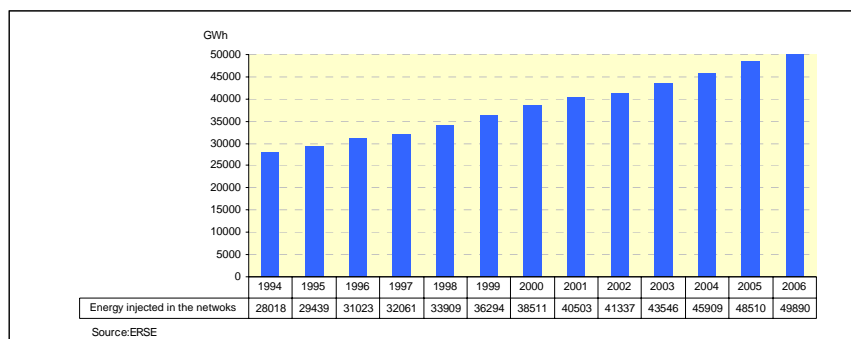
and only in 2000 was ownership hived off into a separate company, REN. This note presents data on the evolution of demand and investment, as well as indicators of quality and prices.

During the period under review, demand increased constantly, at an average annual rate of about 6%. (Figure 1)

Figure 1 - Total electricity consumption

Relevant dates:

- 1995: Legal unbundling of transmission network
- 1997: ERSE created
- 1999: Effective regulation began
- 2000: Ownership unbundling of transmission network



Vertical integration



Legal unbundling

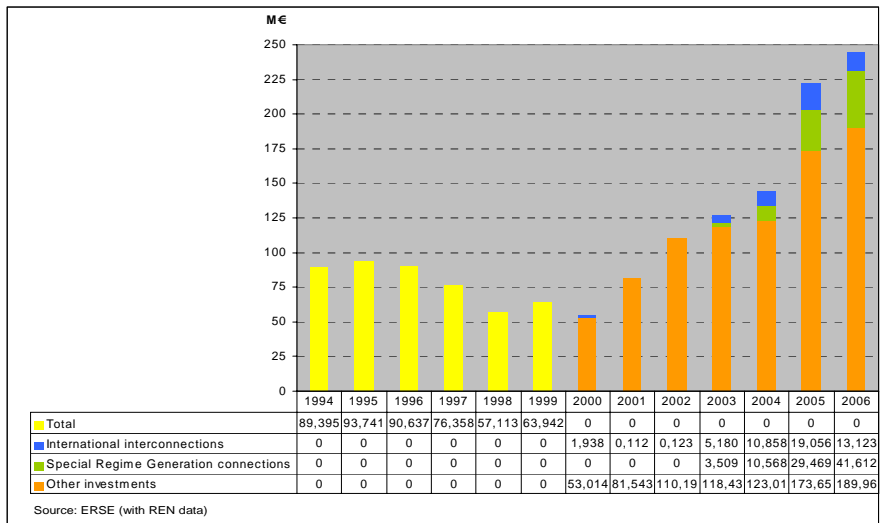


Ownership unbundling

Total investment in the transmission network declined gradually during the vertical integration (and legal unbundling) stages and increased markedly each year under ownership unbundling, more than tripling in amount in real terms in the 7 years (2000-2006), even after excluding investments related to new requirements such as regional integration (MIBEL) and the incorporation of renewable energy sources (Figure 2 shows total investment at 2006 prices and Figure 3 shows real investment at constant prices and constant demand levels).

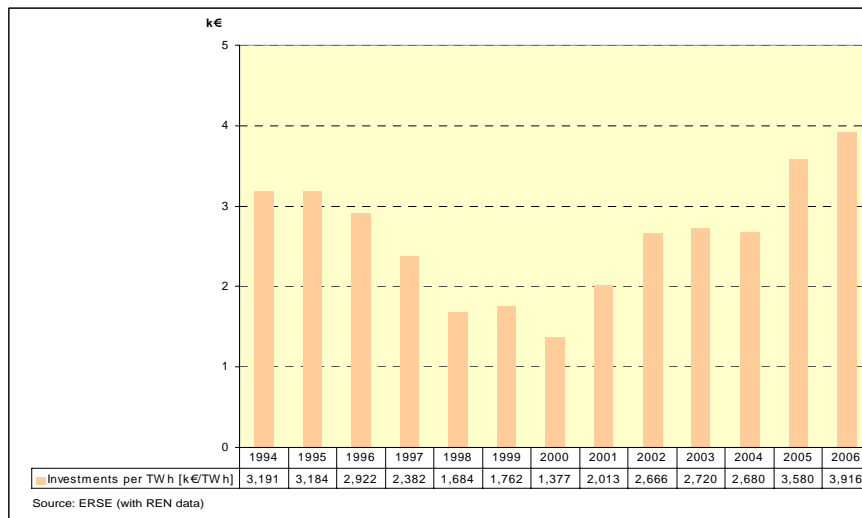
The trend in Portugal is clearly one of declining investment levels under vertical integration and legal unbundling and significant increases in investment under ownership unbundling.

Figure 2 - Transmission network total investment (at constant 2006 prices)



Vertical integration ↑ Legal unbundling ↑ Ownership unbundling

Figure 3 - Transmission network investment excluding Special Regime Generation + MIBEL (at constant prices and demand)

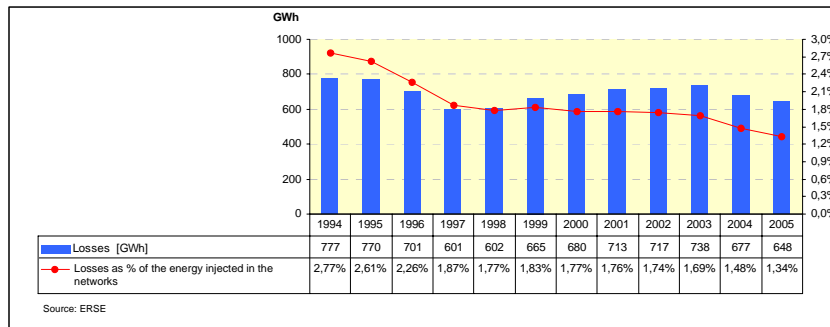


Vertical integration ↑ Legal unbundling ↑ Ownership unbundling

The quality of service provided is analysed from two different perspectives. Transmission network losses are shown in both absolute and in relative terms (Figure 4) while average interruption time is shown with and without exceptional events (Figure 5 and Figure 6).

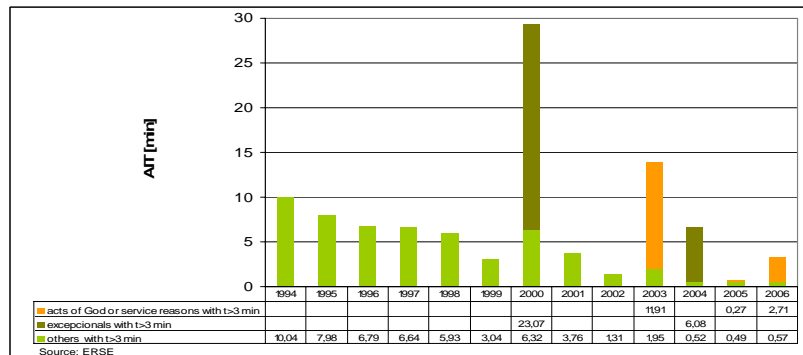
Network losses decline gradually over the full period, as does the average interruption time indicator, showing that quality improvements were not adversely affected by the transition to full unbundling.

Figure 4 - Transmission network losses



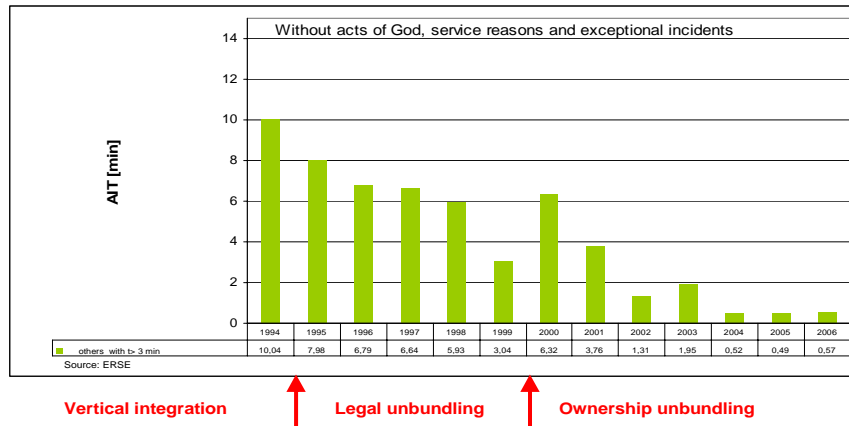
Vertical integration ↑ Legal unbundling ↑ Ownership unbundling

Figure 5 - Average Interruption Time



Vertical integration ↑ Legal unbundling ↑ Ownership unbundling

Figure 6 - Average Interruption Time (excluding exceptional events)



The effective start of regulation on 1999 led to significant declines in prices, both for the general transmission tariff (Figure 7) and for the Very High Voltage transmission tariff (Figure 8). The process continued after the transition to full ownership unbundling, with an overall reduction of about 26% in the former and about 45% in the latter.

Figure 7 - General Transmission Tariff

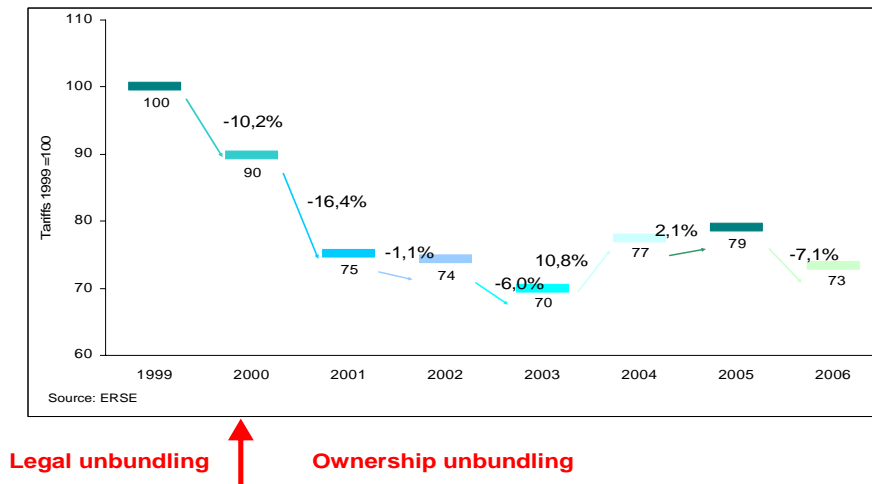
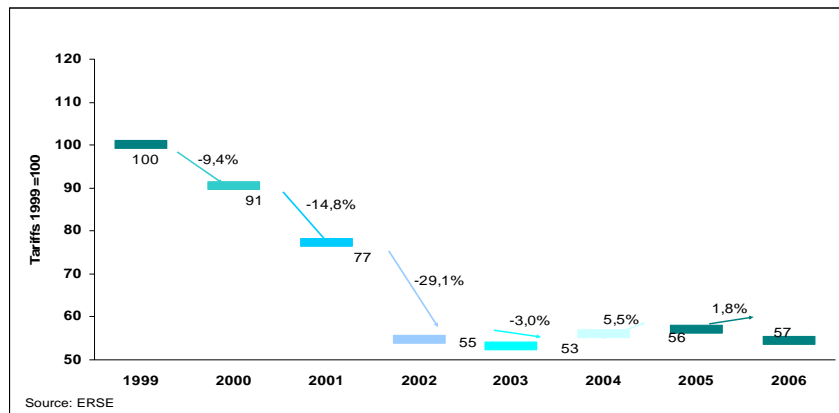


Figure 8 - VHV Transmission Tariff



Legal unbundling ↑ Ownership unbundling

In conclusion, the evidence from Portugal is that legal unbundling produced no visible improvement and that it was only with full ownership unbundling that consumers of electricity benefitted from higher levels of investment, improved quality and lower prices.