

How Will the New EU Energy Legislation Affect Investments in Infrastructure?

Hamilcar P.A. Knops*, Hanneke M. de Jong, and Laurens J. de Vries

Faculty of Technology, Policy and Management, Delft University of Technology

Abstract: *In this paper we try to assess whether the current and the proposed European legal regime for the electricity sector are adequate to ensure the long-term ability of the network ('transport adequacy'). For this assessment of the legal regime we use the 'function-based legal design & analysis' (FULDA) method (Knops, 2008). We perform an ex ante analysis of the regulatory framework of the function of transport adequacy, which forms a test of the utility of the FULDA method for analysis. Then, we present an assessment of both the current EU legal regime and the pending legislative proposals with respect to transport adequacy. This involves an assessment of the respective responsibilities of the network operator and the network owner, their relation, and the regulation of the income of the network firms in relation to investments. Moreover, we will assess to what extent the proposed legislation would bring about the much needed international cooperation between network operators with respect to network planning. Based upon our analysis we suggest improvements of the legal framework.*

INTRODUCTION

It is necessary that the long term ability of the electricity network to meet reasonable demands for the use of the network is ensured. That is the function of 'transport adequacy', which involves network planning as well as the decision making about maintenance and investments. Concerning investments in the networks, both the operator and the owner of the assets play a role. Their relation and the division of responsibilities are crucial (Joskow 2005; Balmert and Brunekreeft 2008). Who makes the planning, who decides about investments and who carries them out? Earlier research concluded that in the current European regulatory framework not all of these issues have yet been sufficiently arranged (Knops 2008, chapters 14 and 15), which the European Commission itself has also acknowledged (EC 2007a).

Moreover, because of the interdependencies that exist in interconnected electricity networks, some form of cooperation and coordination between neighbouring transmission planners is needed. This need has become more prevalent because of the increasing cross-border power flows as a result of growing international electricity trade in the EU. Currently, the (international) cooperation between the European transmission companies is voluntary. Although – according to the European Commission – the voluntary cooperation initiatives have made a significant contribution to the internal market for electricity, this voluntary cooperation has shown its limits (EC 2007a, p. 14).

In the European Union, a new package of (draft) energy legislation is currently being debated (see section 2). Such EU legislation is binding upon Member States. An important aspect of this proposal concerns new rules for the position of network operators and their relation with network owners, as well as their respective responsibilities. The proposal aims at a further unbundling of *transmission* operators in particular (for distribution operators the rules remain more or less unchanged). Moreover, the proposal also aims at strengthening the international cooperation and coordination of transmission operators, *inter alia* with respect to network planning. These changes proposed by the European legislator raise, however, the question of how the function of transport adequacy will be arranged in this new setting.

In this paper we try to assess whether the current European legislative proposals are adequate to ensure the long-term ability of the network. The method that is being used for the assessment of the legal framework is the 'function-based legal design & analysis' (FULDA) method, that has been elaborated by Knops (2008). This method allows a systematic assessment of the legal organization of

* H.P.A. Knops, Researcher, Faculty of Technology, Policy and Management, Jaffalaan 5, NL-2628 BX Delft, The Netherlands, tel. +31-15-2782727, fax +31-15-2783422, email h.p.a.knops@tudelft.nl

a function, taking the relevant economic, legal, technical and economic aspects into account. We apply this method to assess the current and proposed EU energy legislation with respect to the function of transport adequacy.

This paper is structured as follows. In section 2 we introduce the third package of EU energy legislation and the European legislative process. Next, we analyse the function of transport adequacy and its context using the FULDA method (section 3). Subsequently, we consider the four most relevant ‘design issues’ for transport adequacy:

- should the responsibility for this function be *explicitly* imposed? (section 4);
- should the network operator or the network owner be responsible for transport adequacy, and how is their relation? (section 5)
- how should regional cooperation and coordination be organized for transmission planning? (section 6);
- how should governmental control be organized: do we need some form of regional or European control? (section 7).

Finally, we conclude to what extent the proposed European legal regime appears to be adequate to ensure the long-term ability of the network to meet reasonable demand for electricity transport.

2. THE THIRD PACKAGE OF EU ENERGY LEGISLATION

The European Union has currently 27 Member States. Since the start of the European integration in the 1950s, co-operation has always been strong on economic issues. The European (economic) Community is based upon free movement of goods, workers, services and capital. An important objective is the creation of a single, ‘internal’ market in the entire EU. Also for electricity and gas there should be an internal market, which has led to European legislation to liberalise the markets for electricity and gas. The first package of liberalisation legislation dates back to the end of the 1990s, which was followed by a second package in 2003. Currently, a third package of energy legislation is being debated at the European level. The main instruments for such European legislation are Directives (which must be implemented by the Member States) and Regulations (which apply directly within the EU without the need for implementation by Member States).

European Directives and Regulations for the energy market must be adopted in accordance with the so-called ‘co-decision procedure’. The basic structure of this procedure is as follows. The European Commission has the initiative: it presents its legislative proposal to the Council and the European Parliament simultaneously. Subsequently, the Council and the European Parliament must agree upon the final text of the legislation, both having the right to amend the Commission’s proposal. The Council consists of the relevant ministers of all Member States. So, for energy legislation the national ‘ministers of energy’ form the Council, which has an ‘intergovernmental’ character. The European Parliament is a parliament specific to the EU, composed of 785 directly elected representatives; the Parliament thus has more a supranational character. In the codecision procedure, the Council and the European Parliament reach agreement in a stepwise process of a first reading, second reading, and, if necessary, a third reading. If the Council and the European Parliament agree upon a text which they both approve, the legislation can be adopted. Otherwise the legislative proposal is repealed.

The so-called ‘third energy package’ of legislative proposals for new EU legislation for the energy sector was launched on September 19, 2007, by the European Commission with its legislative initiative (EC 2007a, 2007b, 2007c, 2007d, 2007e). The first reading by the Council and European Parliament took place in 2008. At the time of writing of this paper (May 2009) the second reading phase is going on. On April 22, 2009, the European Parliament adopted its version of the draft legislation which holds several amendments on the latest text of the Council. It remains to be seen whether the Council will approve Parliament’s text, or whether a third reading is necessary. As we expect that the final text will not differ much from the text adopted by the European Parliament in April 2009, we have taken this text as the main reference for the third package in this paper (EP 2009a, EP 2009b, and EP 2009c).

The third energy package consists of proposals for a new Electricity Directive, a new Gas Directive, new Regulations for cross-border trade in electricity and gas, respectively, as well as a Regulation establishing an Agency for the Cooperation of Energy Regulators. For this paper, the proposals for the degree of unbundling of transmission network operators (including the relation between network operator and owner) are most relevant. Therefore, we give a brief overview here.

In its initial proposal for a new Electricity Directive, the Commission proposed that the standard case would be that the owner of the network also acts as the network's operator.¹ This would be the standard 'transmission system operator', which *cannot* be part of a vertically integrated energy company, i.e. a company which is also involved in competitive energy activities such as production or supply.

As the only alternative to that standard case, the Commission proposed the 'independent system operator'. In this case, the ownership of the network can remain with a vertically integrated electricity company, provided that the legal entity that owns the network is clearly unbundled from the other parts within the energy company *and* that the operation of the network is performed by an 'independent system operator'. This independent system operator may not be affiliated to the vertically integrated owner of the network, nor to other companies that are active in generation and supply of electricity.

For some Member States, both abovementioned options would go too far. Therefore, they searched for an alternative. This has resulted in a third unbundling option of the *independent transmission operator*, which was proposed by the Council and has been accepted by the European Parliament. It is an alternative to the independent system operator. If the transmission network is owned by a vertically integrated undertaking, a Member State may require the designation of an independent *system* operator (see above), which is *not* affiliated to the network owner, or the appointment of an independent *transmission* operator, which is an operator of the network that may still be affiliated to the network owner *provided that* it complies with several far-reaching unbundling provisions, which are listed in Chapter V of the proposed new Directive.

Pursuant to the current version of the proposals of the third package there would basically be the following three options for the (unbundling of the) transmission network operator:

- the owner and the operator are the same legal entity, unbundled from firms involved in competitive energy activities (such as production or supply);
- the owner and the operator are separate legal entities and they are *not* affiliated (this option is called the 'independent system operator');
- the owner and the operator are separate legal entities, but they both belong to the same group of affiliated companies (of which some could be involved in competitive energy activities; this option is called the 'independent transmission operator').

These options will all be discussed in this paper.

3. ANALYSIS OF THE FUNCTION OF TRANSPORT ADEQUACY

The FULDA method

The FULDA method focuses at the legal organization of *functions*, such as, for example, technical functions. In the context of the electricity industry one could for instance think of the maintenance of the energy balance or voltage control. In this paper we consider the function of transport adequacy. The function-based approach appears to be useful in the context of a complex sector such as the electricity industry (Knops 2008) for which reason it has also been applied by others (cf. OTA 1989, Kirby *et al.* 1995, UCTE OH, NERC's Reliability Functional Model (2008), and NordReg 2006).

The FULDA method provides, first, a framework for the systematic evaluation of the legal organization of a network industry (or parts thereof). It can thus be used for the analysis of a legal framework. Furthermore, if one incorporates the relevant goals and constraints, the FULDA method may provide guidelines for the actual *design* of the legal organization of a network industry, such as the power sector. This has been demonstrated by Knops (2008).

¹ The proposed Articles 8(1)(a) and 8(1)(b) of the Electricity Directive 2003/54/EC (EC 2007a).

The main structure of the FULDA method is shown in Figure 1. When designing, one has to first determine goals and constraints and – preferably – operationalize them. The constraints include *legal* constraints, such as higher order rules that must be followed. Subsequently one must analyze the function concerned. This involves an analysis of the function ‘in isolation’ (step I) as well as studying the function’s context (step II). Regarding the function’s context, the most relevant issues are the actors (actor context), the way in which the function at hand relates to other functions (function context), and the function’s ‘economic context’. The final step (III) of the FULDA method concerns the decisions about the ‘legal organization’ of the function considered, building upon the analysis of the function made in the previous steps. It is in this step III that the designer designs the legal organization of the function concerned.

In this section we will summarize the analysis of transport adequacy ‘in isolation’ and within its context that has been made before by Knops (2008, chapter 14). This covers issues such as the definition of the function, its decomposition into sub-functions, the analysis of who disposes of the relevant information and means, a characterization of the function as well as the study of the different contexts of the function.

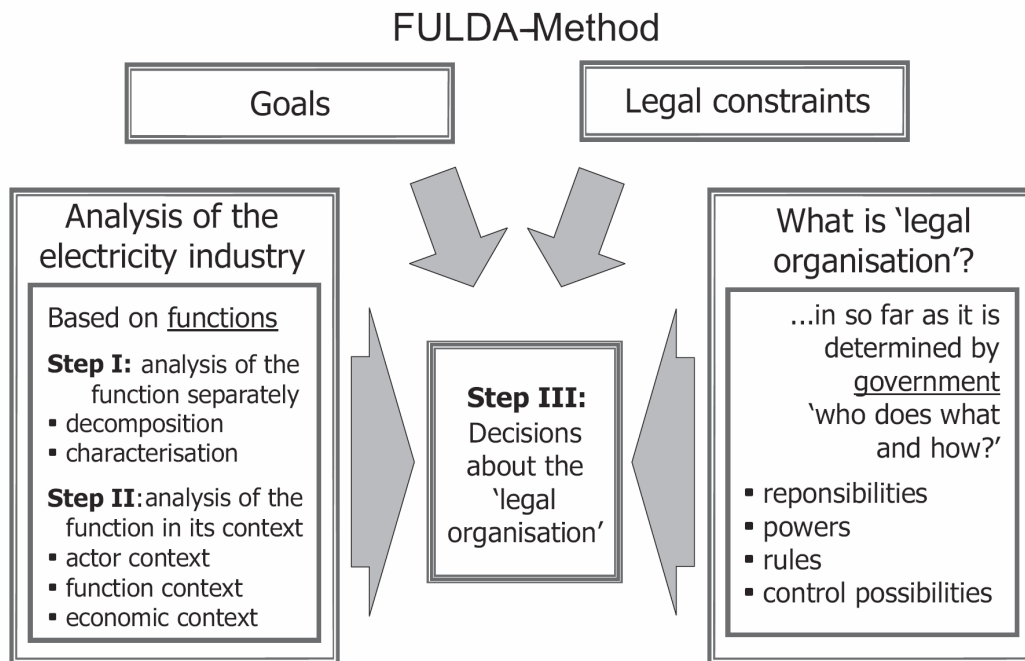


Figure 1. The structure of the FULDA method (from: Knops 2008)

Definition of transport adequacy

The function of transport adequacy could be defined as ‘to ensure the long-term ability of the electric system to meet reasonable demands for the transport of electricity under normal operating conditions’.² Such normal operating conditions include regular and reasonably expected unscheduled outages of system elements. We have used ‘transport’ here in a broad sense referring to the transport operator’s service as to deliver electricity of the right quality to customers. It covers the network-related ancillary services, such as voltage control. ‘Transport’ encompasses both transmission and distribution.

Decomposition of the function

A decomposition can be made of the function of transport adequacy into the following three sub-functions: (cf. NERC 2008)

- the forecasting of the future demand for transport;

² Cf. Article 9(a) Directive 2003/54/EC.

- the planning of the development of the network;
- the actual decision making regarding investments.

It is important to note that the planning of the network's development and the making of actual investment decisions are two distinct subfunctions. Therefore we can distinguish between the role of transport planner and that of the investor. This distinction may prove useful later on in this paper.

The importance of information

Two aspects play an important role for infrastructure adequacy. First, it is vital to dispose of the right *information* in order to plan adequately. This concerns information relating to the long-term development of the network itself as well as the expected use of the network. What developments can be expected regarding demand and generation and their geographical distribution? What is going to happen in neighbouring networks? Moreover, one needs to have good models of the network to be able to calculate the effects of changes to the network (upgrades, expansions, replacements) upon the performance of the network. Finally, for the decisions as to how the network is kept adequate and when investments are made, information about the costs of components and construction is needed as well as about construction times and life times of the components.

Economic context is highly relevant

Second, the *economic context* is highly relevant for transport adequacy. In the end, the function concerns decisions regarding replacement, upgrades or the expansion of the network and its elements. These decisions have an economic component because they cost money, after all. Thus, the owners of the network(s) are crucial actors in the area of transport adequacy, as they are probably the ones who will have to bear the costs of these investments. For them, it is important to see how these investments can be recouped, which depends on the regulatory scheme that is in place for the income of a network operator and/or owner.

These regulatory regimes are still national. A regulatory authority determines the income of the network operators by fixing their tariffs, which the system users pay. In the context of transport adequacy the question is relevant of what the regulatory regime is for investments. There are several options. Investments in the network can be supposed to be financed from the (operator's) general budget from the transport tariffs. Another possibility is that of the regulator granting a specific budget for specific network investments, after governmental approval of the investments concerned. Moreover, it is relevant how national regulation organizes the (financial) relation between the operator and the owner of the network regarding network investments.

For the issue of the investment in interconnectors, the electricity market (for the commodity) is a relevant factor as well. In these cases where price differences may exist between markets (for electric energy), the transport of electricity between those markets has an economic value, corresponding to the price difference between the markets concerned. As it is illegal in the EU to apply a general cross-border transport fee for electricity, the price differences can only remain if there is no physical connection between the concerned markets, or if there is congestion regarding the interconnection between the relevant areas. In these circumstances, it may be an option to consider an investment in interconnection capacity which can be recovered via the exploitation of the trade potential across that link (rather than through regulated cost-based transport tariffs). This is called 'merchant' transmission investment (see, e.g., KNOPS and DE JONG 2005).

Characterization of the function of transport adequacy

The transport adequacy function can be characterized as a necessary,³ long-term function. Moreover, at least per network there should be central coordination of the long-term development of the network concerned. However, regarding the scope of the function it may be worthwhile to distinguish between distribution networks, transmission networks, and interconnectors.

³ This has been recognised by the European legislator: "The maintenance and construction of the necessary network infrastructure, including interconnection capacity [...] are important elements in ensuring a stable electricity supply." (Recital (23) of Directive 2003/54/EC)

Distribution

For most distribution networks the relevant scope of the transport adequacy function is the distribution network itself. In distribution networks, the power is drawn from (higher-voltage) transmission networks (to which the large power stations are connected) and then distributed to the customers (loads). The flows in and the capacity of the distribution network can be predicted fairly well and do not seem to depend too much on the capacity of other networks. Therefore, the scope of transport adequacy for a distribution network appears to be a single distribution network.

Transmission

The situation is different for transmission networks. The direction of flows can vary significantly depending on which generating installations (at which locations) produce power. Moreover, the transfer capability ‘within’ a certain transmission network (of a single network operator) is affected by the situation in neighbouring networks. For example, the situation in the (North-)German electricity grid has an impact on the transport capacity in the Dutch network. Consequently, the relevant scope for the effective planning of the adequacy of a transmission network is larger than the network itself. Therefore, if there is no overarching planning co-ordinator, at least some co-operation of neighbouring transmission operators (such as the exchange of information and ‘capacity plans’) appears useful (see below).⁴

Interconnection

For the development of interconnection capacity the situation is even more complicated. Here, two different network operators are involved and, generally, two different regulatory frameworks as well. So, for transmission and interconnectors, the scope of the function of ‘transport adequacy’ appears to be larger than the network itself because of the impact neighbouring networks have.

The means for transport adequacy

The *means* for securing transport adequacy are, of course, the different types of network components and supporting equipment: transmission lines, transformers, capacitors, *etc.* But, also generating installations could help mitigate transmission constraints and thus enhance the transport capability of a network. These generation assets are, however, operated and owned by generating companies. The European unbundling requirements prevent that network operators operate generating installations. Moreover, the development of generation capacity is the aggregate result of decentral decisions taken by the different generation companies. In the current context there is no such thing as (central) ‘generation planning’ in the European electricity market. Therefore, it is difficult to envisage how some form of integrated ‘long-term planning’ of both generation and transmission (which is mentioned in the current Electricity Directive 2003/54/EC)⁵ can be arranged in practice. This issue lies, however, outside the scope of this chapter.

Design questions according to the FULDA method

After the analysis of the function of transport adequacy in the first two steps of the FULDA method, the third step of the method deals with the relevant aspects of the function’s legal organization. This basically concerns answering the following questions:

- A. Should someone be made explicitly responsible for the function at hand?
- B. If so, who should be made responsible?
- C. How should the function be further organized?
- D. What governmental control options should be implemented?

⁴ Cf. the Reliability Functional Model of the North American Electric Reliability Council (NERC RFM), which defines a function ‘planning reliability’ that involves *inter alia* integrating the plans from all the transmission planners within the ‘planning coordinator area’ (NERC 2008, *Function Definitions and Responsible Entities*, p. 19).

⁵ The Electricity Directive 2003/54/EC defines ‘long-term planning’ as “the planning of the need for investment in generation and transmission and distribution capacity on a long term basis, with a view to meeting the demand of the system for electricity and securing supplies to customers” (Article 2(25)). Moreover, in Article 3(2) of Directive 2003/54/EC it is explicitly mentioned that “[i]n relation to security of supply [. . .] Member States may introduce the implementation of long term planning”.

These questions will be addressed in the following sections for the function of transport adequacy, focusing on the points of interest of this paper. This means that concerning question B we will discuss the relation between the operator and the owner of the network and their respective (legal) positions. In the context of the question about the further organization of the function, the aspect of the function's scope comes into play. We will focus there upon the need for international coordination of transmission planning and how that can be brought about. With respect to the last question, about governmental control, we are interested in the question whether national governmental control is sufficient or whether we need a regional or European approach.

The next sections will be structured as follows. First, we present the results of the 'FULDA analysis' of the question concerned (based upon Knops 2008). Then, we discuss the current European legislation for the issue concerned. Subsequently, we describe the changes proposed in the third energy package. Finally, we assess the proposals with regard to the issue at hand.

4. EXPLICIT RESPONSIBILITY?

The FULDA analysis

The first legal design choice considered in the FULDA method is the question of whether some actor should be made *explicitly* responsible for the function at hand. In the case of transport adequacy, the FULDA method suggests that for each network some actor be made explicitly responsible for the function of transport adequacy (Knops 2008, p. 371-372).

The current situation for transmission

The current Electricity Directive (2003/54/EC) imposes the responsibility for the long-term development of the transmission networks explicitly upon the transmission system operators: "Each transmission system operator shall be responsible for ensuring the long term ability of the system to meet reasonable demands for the transmission of electricity".⁶ That responsibility for the adequacy of the system encompasses the network including the interconnections with coupled networks. This means that the development of interconnection capacity is a joint responsibility of the relevant network operators.

The proposals

Pursuant to the latest draft of the a new Directive, the new situation will be as follows. The *transmission system operator*, which should also be the owner of the network, will also in the future be explicitly charged with the responsibility for "ensuring the long-term ability of the system to meet reasonable demands for the transmission of electricity" (the proposed Article 12(a) of the Directive). For the *independent system operator*, which itself will not be the owner of the network, we find a slightly different formulation: "Each *independent system operator* shall be responsible for [...] ensuring the long-term ability of the system to meet reasonable demand through investment planning" (the proposed Article 13(4) of the Directive). The responsibility of the *independent system operator* appears to be restricted to the "planning, construction and commissioning of the new infrastructure" (the proposed Article 13(4) of the Directive). Also in the context of the *independent transmission operator*, the draft text of the new Directive explicitly provides that the independent transmission operator shall be responsible for the task of "investment planning ensuring the long-term ability of the system to meet reasonable demand and guaranteeing security of supply" (the proposed Article 17(2)(f) of the Directive). So, in all of the three cases (TSO, ISO, and ITO) the responsibility for transport adequacy is imposed explicitly pursuant to the draft of the new Directive.

The current situation for distribution

For distribution networks, the operator's responsibility for the network's adequacy is currently more implicit, as it is only part of the operator's definition: "a 'distribution system operator' means a natural or legal person responsible for [...] ensuring the long term ability of the

⁶ Article 8(1)(a) in combination with 2(4) of Directive 2003/54/EC.

system to meet reasonable demands for the distribution of electricity”.⁷ However, besides being part of the definition, the task is not explicitly imposed elsewhere in the Directive.

The proposals for distribution

This more implicit establishment of the distribution operator’s responsibility for transport adequacy would have remained under the Commission’s original proposal for a new Electricity Directive (EC 2007a). The European Parliament has, however, in its second reading amended the Commission’s proposal such that in the future Article 25(1) of the new Directive would read: “The distribution system operator shall be responsible for ensuring the long-term ability of the system to meet reasonable demands for the distribution of electricity”. So, if this draft text would become the text of the new Directive, distribution system operators would explicitly be charged with the responsibility for transport adequacy, in line with the design prescribed by the FULDA method.

5. WHO MUST BE RESPONSIBLE: THE OPERATOR OR THE OWNER?

The FULDA analysis

The second issue considered in the FULDA method is the question of *who* is to be appointed as the responsible actor for the function. In the context of generation adequacy there are two relevant actors: the network operator and the network owner (cf. the Reliability Functional Model of NERC (2008), which defines the distinct roles of Transmission Operator and Transmission Owner). The operator is in charge of the daily network operation and disposes of the information about the network’s characteristics, performance and use. The owner of the network has the economic interests: he probably has to bear the costs of the investments in the network. The operator is not necessarily the owner of the network assets.⁸ It is, for example, quite common in Europe that the network operator is part of a vertically integrated undertaking, within which another legal entity owns the network assets. In this case, operator and owner are affiliated. It is however also possible that the owner and operator are *not* affiliated (separate companies).

At the subfunction level the picture is as follows. On the one hand, the transport operator can be considered capable of performing the subfunctions of forecasting and planning himself. On the other hand, the network owner appears to be the natural candidate for deciding about the actual investments in his network.

The responsibility for the function at large can be entrusted either upon the operator or the owner. If the network operator is designated as the responsible actor, it must be ensured that the planning he makes can be effected in the decision stage. Transport adequacy cannot be secured if the network planner’s plans are not implemented. However, if the owner of the network is made responsible for the function of transport adequacy at large, it may be necessary to entrust another actor (most likely the network operator) with the responsibility for forecasting and planning. Therefore, the relation between network operators and owners as well as their respective responsibilities must be carefully designed.

Regarding the relation between network operator and owner, we distinguish three situations. First, the network owner and the network operator can be the same company, unbundled from other activities. Second, the owner and the operator of the network can be separate legal entities, but still affiliated. In this case, they both belong to a group of companies with the same owner(s). If such a group of companies is also involved in competitive energy activities, such as electricity generation or supply, cross-subsidies from network activities to competitive ones should be prevented and the company should not be able to withhold (necessary) network investments, such as interconnector investments, for example in order to hamper the development of competition for generation and supply in its home market. The third case is that of the network operator and the network owner being separate companies that are *not* part of the same group of companies and thus not affiliated. For example, in Scotland there are two ‘Transmission Owners’ (Scottish Power and Scottish &

⁷ Article 2(6) of Directive 2003/54/EC.

⁸ The Electricity Directive allows that the network assets are *owned* by another legal entity than the network operator (Articles 10(1) and 15(1) as well as Recital (8) of Directive 2003/54/EC).

Southern), who each own part of the Scottish transmission network, whereas the ‘Transmission Operator’ is the National Grid Electricity Transmission plc., which is not affiliated with either of the owners.

Current European legislation

The current Electricity Directive (2003/54/EC) deals mainly with the first two situations. It imposes the responsibility for the entire function of transport adequacy upon the network *operator*, which is fine as long as owner and operator are the same or affiliated. The Directive specifically addresses the case where the transmission or distribution operator is part of a vertically integrated group of companies in which another company owns the infrastructure in Articles 10(2)(c) and 15(2)(c). There it is provided that the transmission or distribution operator must have effective decision making rights, independent from the integrated electricity undertaking, with respect to assets necessary to operate, maintain or develop the network. The parent company may not give instructions with respect to individual decisions concerning the construction or upgrading of transmission or distribution lines. However, the parent company is allowed to set a global policy about issues such as the return on assets and the level of indebtedness of its subsidiary.

But the current Directive does not really deal with the case of the network owner and operator not being affiliated. Interestingly, in the Scottish case, the responsibility for developing and maintaining the transmission networks has been imposed upon the *owners* of the network, despite the Directive’s provision which entrusts the operator with that responsibility (see further: Knops 2008, p. 375).

The proposals of the third package

The initial proposal of the European Commission to amend the Electricity Directive did not envisage fundamental changes for the regulation of the distribution of electricity. Neither did the Council nor the European Parliament propose any significant changes in the rules for distribution. With regard to transport adequacy it must be noted that the European Parliament has adopted an amendment which explicitly imposes the responsibility for transport adequacy upon the distribution system operator. With respect to the relation between the distribution network operator and the network owner, the situation remains more or less unchanged under the proposal for a new Directive.

In contrast to distribution, the Commission’s proposals with regard to transmission were far-reaching and hence have been heavily debated. The initial proposal for a new Electricity Directive from the European Commission aimed at the following organization of transmission adequacy. The standard case proposed by the Commission was that of a fully unbundled transmission system operator which would also be the owner of the network.⁹ That transmission system operator cannot be part of a vertically integrated energy company. In this case, transmission adequacy would remain the responsibility of the transmission system *operator*.¹⁰ As the owner and the operator of the network coincide, the owner/operator can be responsible for the entire function and problems about the relation between operator and owner do not occur.

As described in section 2, the Commission has proposed the ‘independent system operator’ as an alternative. The independent system operator acts as the independent operator of a network that is owned by another, not affiliated undertaking (which may be part of a vertically integrated energy company). In these situations of the network owner and operator not being affiliated, it is vital to clearly arrange the position of both the owner and the operator and their relationship,¹¹ which the draft text of the new Directive does as follows with regard to transmission adequacy.

Each independent system operator shall be responsible for ensuring the long-term ability of the system to meet reasonable demand through investment planning. So, the responsibility for the function at large is imposed upon the *operator*, but with a focus on the planning aspect of transport adequacy. When developing the network, the independent system operator is responsible for ensuring planning, construction and commissioning of the new infrastructure, just like the standard

⁹ The proposed Articles 8(1)(a) and 8(1)(b) of the Electricity Directive 2003/54/EC (EC 2007a).

¹⁰ Article 9(a) of the Commission’s proposal to amend Electricity Directive 2003/54/EC (EC 2007a) or Article 12(a) of the latest draft text for a new Electricity Directive (EP 2009a).

¹¹ See for a discussion of the independent system operator in relation to the issue of network investments, for example, Balmert and Brunekreeft (2008).

‘transmission system operator’. Pursuant to the proposal for the new Directive, transmission system owners may not be responsible for investment planning.¹² The independent system operators must make 10-year network development plans, which are to be monitored by the regulatory authority. Transmission system owners, in turn, must cooperate with the independent system operator and provide all relevant information, finance the investments decided by the independent system operator and approved by the regulatory authority, or give its agreement to financing by other parties (including the independent system operator), and provide guarantees for financing any network expansions (except for those that are carried out by other parties).¹³ Therefore, the regulatory authority shall ensure that the network tariffs collected by independent system operators include a remuneration for the network owner that provides for an adequate remuneration of the network assets and of any investments therein.¹⁴ Moreover, the regulatory authority should be given the opportunity to examine the draft contractual arrangements between the transmission system owner and the independent system operator.¹⁵

For some Member States, both abovementioned options would go too far. Therefore, they searched for an alternative. This has resulted in a third unbundling option of the *independent transmission operator*, which was proposed by the Council and has been accepted by the European Parliament. It is an alternative to the independent system operator. If the transmission network is owned by a vertically integrated undertaking, i.e. a company that is also active in competitive energy activities, a Member State may require the designation of an independent *system* operator (see above), which is *not* affiliated to the network owner, or the appointment of an independent *transmission* operator, which is an operator of the network that may still be affiliated to the network owner *provided that* it complies with several far-reaching unbundling provisions, which are listed in Chapter V of the proposed new Directive.

The rules for the independent transmission operator build upon the current rules for the transmission system operator. The independent transmission operator is charged with the responsibility for “investment planning ensuring the long-term ability of the system to meet reasonable demand and guaranteeing security of supply.”¹⁶ But the European legislator has recognized that the relation between the operator and the owner is crucial and that the rules should prevent the vertically integrated undertaking from using its influence on the network operator for its own objectives and benefit. Therefore, the draft text of the new Electricity Directive contains several provisions concerning the relation between the operator and the owner, also with respect to transport adequacy. First of all, the independent transmission operator shall have effective decision-making rights, independent from the vertically integrated undertaking, with respect to assets necessary to develop and maintain the transmission system.¹⁷ Besides decision rights, appropriate financial resources for future investment projects and/or replacement of existing assets must be made available to the independent transmission operator in due time by the vertically integrated company owning the network.¹⁸ Moreover, the commercial and financial relations between the operator and the parent company should comply with market conditions, which should be supervised by the national regulatory authority. In the latest version of the draft Directive, the proposed Article 22 deals with “network development and powers to make investment decisions”. Every year, the independent transmission operator shall submit to the regulatory authority a 10-year network development plan, after consultation of all the relevant stakeholders. The vertically integrated company should not influence the activities necessary for the preparation of the 10-year network development plan.¹⁹ The regulatory authority shall monitor the evaluation of the network development plan. An interesting provision is the proposed Article 22(7) of the new Directive. In circumstances where the independent transmission operator does not execute planned investments (from the 10-year plan) the national regulatory authority should be authorized to take certain measures in order to ensure that the

¹² The proposed Article 13(4) of the new Electricity Directive (EP 2009a).

¹³ The proposed Article 13(5) of the new Electricity Directive (EP 2009a).

¹⁴ The proposed Article 36(3)(d) of the new Electricity Directive (EP 2009a).

¹⁵ The proposed Article 13(2)(d) of the new Electricity Directive (EP 2009a).

¹⁶ The proposed Article 17(2)(f) of the new Electricity Directive (EP 2009a).

¹⁷ The proposed Article 18(1)(a) of the new Electricity Directive (EP 2009a).

¹⁸ The proposed Article 17(1)(d) of the new Electricity Directive (EP 2009a).

¹⁹ This follows for example from the proposed Article 20(1) of the new Electricity Directive (EP 2009a).

investment in question is made. Possibilities to ensure this are to require the independent transmission operator to execute the investment, to organize a tender, or to oblige the independent transmission operator to accept the necessary capital under the condition that the investment is carried out.

Assessment of the proposals

How should we assess the Commission's proposal regarding the issue of who should be made responsible for transport adequacy (the owner or the operator)? In the case that the owner is also the operator of the network, this 'who question' is not really an issue. In those cases that owner and operator are different entities, the 'who question' is highly relevant. The current Directive as well as the latest draft text for a new Directive impose the responsibility for transport adequacy upon the *operator* of the network, not upon the owner. This choice is practical in so far it leaves the sub-functions of forecasting and planning to the operator, as this actor can be considered capable of performing these sub-functions, but it may be problematic when it comes to the decision making about actual investments, which appears to be more a task for the *owner* of the assets. In order to let the operator's network planning be implemented, something must be arranged so that the owner carries out the necessary investments.

Pursuant to the proposal for a new Directive, the network owner is more or less obliged to make the investments that the operator prescribes in his network development plan. This raises the question whether there is still any discretion left for the network owner. In particular in the case where network owner and operator are *not* affiliated, it would be strange if the operator could force the unrelated network owner to invest. It is useful that the draft text of the new Directive contains a few arrangements for this problem in the case of the independent system operator, namely the possibility of regulatory control of the investment plan, the duty for the regulator to ensure that network tariffs are such that they generate sufficient funds for the necessary investments by the network owners, and, finally, the possibility that the owner can let a third party carry out a necessary investment in the network. But we would argue that more justice is being done to the position of the network owner if he is given sufficient discretion to decide about actual investments, without compromising an adequate development of the network. For example, the network planner could provide the network owner with a range of options to keep the network adequate. The network owner can then decide which option he prefers. For instance, does he prefer to build a new transmission line right now, or invest in a transformer now and upgrade a transmission line later.

In the case of the independent transmission operator, the network operator and the network owner are affiliated and it appears that, for these cases, the European legislator wants to strengthen the powers and (financial) possibilities of the independent transmission operator vis-à-vis the affiliated vertically integrated owner of the network. As an important point of concern of the European legislator is the withholding of investments by the independent transmission operator, for example to protect the 'home market' of its parent company, it has proposed to authorize the national regulatory authority to take measures in order to ensure that necessary investments are carried out.

6. HOW SHOULD REGIONAL COORDINATION BE ORGANIZED FOR TRANSMISSION PLANNING?

The FULDA analysis

In the context of transport adequacy not only the relation between network owner and operator deserves special attention, but also the aspect of the function's scope. In our analysis we saw that for distribution networks the relevant scope for the network's adequacy is a single network, so that each network operator and/or owner can reasonably well secure the adequacy of its own network without being dependent upon others. For transmission networks and interconnection capacity, the scope of the function of transport adequacy is larger than a single network (if that network is coupled). So, if the responsibility for transport adequacy for transmission and interconnection is imposed upon the operators (or owners) of the individual transmission networks, some cooperation or coordination between neighbouring transmission operators (or owners) is needed in order to let the

aggregated effect of their investment decisions be effective (because of the interdependencies that exist within the network).

In general we identify four options how coordination regarding the (spatial) scope can be organized. The ‘regional’ function concerned can be performed by:

- different (local) actors, without any explicit (regional) co-ordination;
- different (local) actors, but with (regionally) co-ordinating rules;
- different (local) actors, but with a (regional) co-ordinating body;
- the same (regional) actor.

The choice of the most suitable level of co-ordination may depend on the circumstances, such as the existing institutional framework.

In the electricity industry, we can find examples of each of these levels of co-ordination. An example of the first type (no explicit co-ordination mechanism) can be found in the current organization of transport adequacy, in which there does not yet exist any explicit regional co-ordination regarding the planning of network investments. The organization of the maintenance of the energy balance within the context of the UCTE (the organization related to the simultaneously interconnected electricity system on the European continent) is an example of the second level of co-ordination. Each system operator maintains the ‘balance’ within his control block, while the co-ordination among them is achieved through a set of rules (laid down in the *UCTE Operation Handbook*). An example of the coordinating body is the European Network of Transmission System Operators for Electricity that the European Commission has proposed and which is to be granted authority for a list of issues which mainly concern international coordination. The last coordination mechanism would be at stake if a regional (i.e. multinational) transmission system operator would be created by several national network companies. The European legislator explicitly reckons with this possibility in its proposal for a new Electricity Directive.²⁰

In the case of the transport adequacy function for transmission it is evident that at least some exchange of information is necessary between neighbouring operators. This is the bare minimum of cooperation. It would be better if neighbouring transmission system operators would engage in some form of closer cooperation, such as joint planning. The distinction between the sub-functions of ‘planning’ and ‘decision-making’ can be useful in this context as well. It is evident that the transmission operators/owners are in a position to *decide* about investments that have to take place within their own network. But that does not preclude the possibility of instituting some form of ‘joint planning’ for the transmission network in a certain region. It is imaginable that the sub-function of planning is carried out jointly by the different connected network operators (for example, through a co-ordinating body), whereas the eventual *decision making responsibility* concerning the investments in a single transmission network would remain with each individual network operator.²¹

Current situation

In the current European electricity legislation not much has yet been arranged about the cooperation of network operators with regard to investment planning. It is largely voluntary.

The proposals of the third package

However, the European Commission has recognized this gap and has proposed to strengthen the cross-border cooperation between transmission operators. In its proposal for a new package of EU energy legislation it has proposed the establishment of the European Network for Transmission System Operators for Electricity (ENTSO-E) as a structure in which all European transmission operators should cooperate.²² According to the European Commission, the voluntary cooperation

²⁰ The proposed Article 9(5) of the new Electricity Directive: “The obligation set out in point (a) of paragraph 1 is deemed to be fulfilled in a situation where two or more undertakings which own transmission systems have created a joint venture which acts as a transmission system operator in two or more Member States for the transmission systems concerned.” (EP 2009a).

²¹ As was also suggested in Knops (2008).

²² Article 2a of the Commission’s initial proposal to amend Electricity Regulation (EC) 1228/2003 (EC 2007d). In the most recent drafts for a new Electricity Regulation it concerns Articles 4 and 5 (EP 2009b). Although these Articles only refer to ‘all transmission system operators’ I assume that this includes the *independent* system operators (and the independent transmission operators) as well.

between transmission system operators is no longer sufficient, so that the cooperation structures of these operators “need to be fully recognized at the European level as having the authority to carry out the [assigned] tasks.”²³ The ENTSO-E should be given *inter alia* the responsibility to adopt a and publish every two years an EU-wide non-binding 10-year network development plan.²⁴ This plan shall include the modelling of the (inter)connected network, scenario development, a generation adequacy outlook and an assessment of the resilience of the system. The network development plan should build upon the national investment plans and should identify investment gaps, in particular with respect to cross-border capacity.²⁵ These proposals suggest EU-wide planning of the network, which may be too large a scope for transmission investment. Regional planning may already be a big step forward.

It appears that the European Commission has itself also been aware of the importance of *regional* investment planning as it has acknowledged that for investment planning “regional initiatives play a positive role in market integration. The cooperation of transmission system operators at European level should indeed be complemented at regional level, in order to ensure [...] appropriate investment planning.”²⁶ The regulatory framework should promote regional initiatives, such as for example the Pentalateral forum in Northwest Europe. Therefore, the Commission has proposed to establish the regional cooperation of transmission system operators (within the larger ENTSO-E). The transmission system operators in a region shall publish a regional investment plan every two years, and may take investment decisions based on that regional plan.²⁷ Pursuant to the proposal for a new Regulation, the geographical area covered by each regional cooperation structure may be defined by the Commission, through the ‘comitology’ procedure.²⁸

Summarizing, we see that the European legislator wants to arrange the necessary regional cooperation and/or coordination through the establishment of specific EU-wide *body*, the ENTSO-E. Within that body, regional initiatives are expected to deal with the actual regional coordination of the planning of the network’s development. In accordance with the third package proposal, transmission network planning would in the future be carried out at the regional level, jointly by the relevant transmission operators, thus matching better with the relevant scope of the sub-function of transmission planning. In this setting it is not necessary that the individual transmission operators in a region merge, although the Commission’s proposal does reckon with that possibility.²⁹

Assessment of the proposed regime

Although *regional* planning may be a step forward for transmission adequacy, two issues remain. The first concerns the question whether there is any discretion left for the national actor that has to make the decisions regarding the investments. Would a national transmission system operator and/or owner be obliged to make the investments that the regional (or EU-wide) investment plan prescribes? Or would there be some discretion left for these operators/owners regarding the actual investment decisions? The initial proposal of the Commission proposal was not very clear about this, but suggested that the EU-wide plan was binding (see, e.g., the proposed Article 2h(1) (EC 2007d), which stated that “the regional investment plan may not be contradictory to the [EU-wide] investment plan”). The Commission’s initial proposal has been amended by the Council and the European Parliament and in the most recent version of the proposal for a new Regulation it is now explicitly stated that the EU-wide plan is *non-binding*. Moreover, where the Commission used the term ‘investment plan’ in its initial proposal, in the current drafts this plan is called: ‘network development plan’. This suggests that these plans are supposed to have more the character of a ‘capacity plan’ than a concrete *investment* plan. This would leave some discretion to the relevant national actors about the actual investments in their networks. This could for example be achieved through working with network development plans which indicate ‘capacity targets’ that must be

²³ Explanatory memorandum of the third package, p. 15 (EC 2007a).

²⁴ The proposed Articles 8(3)(b) and 8(10) of the new Electricity Regulation (EP 2009b).

²⁵ The proposed Article 3(10) of the new Electricity Regulation (EP 2009b).

²⁶ Explanatory memorandum of the third package, p. 15 (EC 2007a).

²⁷ The proposed Article 12(1) of the new Electricity Regulation (EP 2009b).

²⁸ The proposed Article 12(3) of the new Electricity Regulation (EP 2009b).

²⁹ Cf. the proposed Article 9(5) of the new Electricity Directive (EP 2009a).

achieved at several specific points in the regional network, but which leave it to national actor to decide how that capacity is realized.

The second issue is the money aspect. The tariffs for the use of the networks are still determined at the national level, and the income of network operators and owners is paid for by the national customers. However, the point of *regional* planning is that investments in transmission networks (including interconnectors) may have a positive effect in an area larger than a single Member State. For example, an investment in the Dutch network could help alleviate transmission constraints in the network in Northern Germany. Or it is even imaginable that it is much more efficient to build a transmission line from one part of a country to another part of that same country through *another* country. For example, if one would like to construct a transmission line from the North of Norway to the South of that country, building that line through Norway would be very expensive because of all the fjord crossings, whereas constructing that line just across the border in Sweden would be much easier and cheaper. In all these cases, something should be arranged for financing and effecting such investments. This relates to the last aspect of the legal organization of a function in the FULDA method, the issue of governmental control, which is discussed below.

7. GOVERNMENTAL CONTROL

The FULDA analysis

For a long-term function such as transport adequacy the time scale of the function itself is more or less in the same range as the typical time scale on which government can exercise its control. Therefore, it seems possible that government can play a meaningful role in the governance of transport adequacy. Here, we want to focus upon two types of governmental control. First, the possibility of requesting governmental review or approval of network development plans, and, second, the ability of the government to determine the income of the network operators (and/or owners). For these two issues we would like to consider what effect the institution of some regional planning for transmission capacity has upon the question of which ‘government level’ is the appropriate level for the implementation of governmental control. Is national regulation still sufficient or do we need a regional or European approach?

A control possibility for government is to oblige transmission network operators to publish their long-term planning of the network on a regular basis. In those plans the network operators should show that the ‘planned’ network will be adequate. Moreover, these plans could be made subject to some form of governmental approval. Currently, this type of control is exercised at the national level. However, the motivation for joint regional planning of the development of the network is the existence of interdependencies in the interconnected transmission network. Investments in one part of the system may have (positive or negative) effects in another part. National governmental control of the investment plans for the network may in this situation not always be sufficient. For example, if certain investments in the network of one country are considered very useful for the network in a wider region, but have few (positive) effects for the country in which the investments should take place, the national governments of the neighbouring countries are probably most motivated to bring about the investment but they most likely lack the power to enforce that investment. A possible solution for this problem could be that a body with a wider scope, for example at the EU level, exercises control in these cases.

The third package

The proposals for a new package of EU energy legislation may bring some improvements. Control at the national level is retained, see, e.g., the proposed Article 36(1)(f) of the new Directive which provides that the regulatory authority shall have the duty of monitoring the investment plans of the transmission system operators.³⁰ When an *independent* system operator has been designated, the national regulatory authority shall approve the transmission network investment planning and network development plans for that independent system operator.³¹ In addition to these forms of

³⁰ The proposed Article 36(1)(f) of the new Electricity Directive (EP 2009a).

³¹ The proposed Article 36(3)(c) of the new Electricity Directive (EP 2009a).

national control, some ‘international elements’ are introduced by the third package. First, the national regulatory authority must also assess to what extent the investment plans of the national transmission system operator(s) are consistent with the non-binding EU-wide 10-year network development plan.³² Second, the Commission has proposed the establishment of an Agency for the Cooperation of Energy Regulators (ACER) through which the actions of the national regulatory authorities can be coordinated.³³ This Agency shall monitor the activities of the ENTSO-E, including the making of the non-binding EU-wide 10-year network development plan, about which the Agency may give its opinion.³⁴ Moreover, the Agency shall have the task to monitor the implementation of the 10-year network development plans as well as to monitor the progress in the implementation of projects to create new interconnector capacity.³⁵ In addition to these tasks, it is proposed that the Agency shall also monitor the *regional* cooperation of transmission operators within the context of ENTSO-E.³⁶

Assessment

But the question remains how in the case of such European control the link between the investment and the regulation of the income of the network operator or owner, which is still a national issue, would be arranged. The income of the (exclusive) transmission system operator is regulated at the *national* level.³⁷ This provides government with a powerful tool to control the economic picture surrounding investment in transmission infrastructure. For example, government approval may be required before a large investment can be included in the rate base for the transmission tariffs.³⁸ An interesting ‘design choice’ is whether the relevant regulatory authority is allowed (or even obliged) to develop and consider alternatives to the submitted plan, or that it can only approve or not approve the plan as it has been submitted.³⁹ The national regulatory authority which fixes or approves the network tariffs should ensure that these tariffs are sufficient to allow the necessary investments to be carried out in order to secure the viability of the networks.⁴⁰ If an independent system operator has been designated, the national regulatory authority would have the additional duty to ensure that the “network access tariffs collected by the independent system operators include a remuneration for the network owner(s) that provide for an adequate remuneration of the network assets and of any investments therein.”⁴¹ However, ‘international’ control of access regimes would under the proposal for a new Regulation only be at stake for cross-border interconnection capacity, for which it is proposed that the Agency shall decide upon the regulatory regime.⁴² So, for those cases in which network investments within one country would significantly benefit other countries, the third package proposal would not yet be sufficient in order to arrange that the investment can be paid for by those ‘foreign’ system users that benefit from it. For such cases, a solution could be some form of cross-border payment (or compensation) for the investment. For instance, in the example given above of the transmission line from the North to the South of Norway through Sweden, the Norwegian transmission operator could pay the Swedish one for constructing that line, after raising the Norwegian network tariffs, if that would be necessary to finance the investment.⁴³

³² The proposed Article 36(1)(f) of the new Electricity Directive (EP 2009a) and the proposed Article 8(10a) of the new Electricity Regulation (EP 2009b).

³³ Proposal for a regulation establishing an Agency for the Cooperation of Energy Regulators (EC 2007c).

³⁴ Articles 6(3) and 6(4) of the proposed Regulation establishing an Agency for the Cooperation of Energy Regulators (EP 2009c) and the proposed Article 9(1) of the new Electricity Regulation (EP 2009b).

³⁵ The proposed Articles 6(6) and 6(6b) of the regulation establishing an Agency for the Cooperation of Energy Regulators (EP 2009c).

³⁶ Article 6(7) of the proposed regulation establishing an Agency for the Cooperation of Energy Regulators (EP 2009c).

³⁷ Articles 20(1) and 23(2) Directive 2003/54/EC.

³⁸ Cf. Article 41b(2) of the (Dutch) *Elektriciteitswet 1998* (Electricity Act 1998).

³⁹ An example of the former is New Zealand: there the regulator has an obligation to compare the proposed investment with alternative projects (the ‘Grid Investment Test’, see Barton (2007)).

⁴⁰ The current Article 23(2)(a) and the proposed Article 36(6)(a) of the new Electricity Directive (EP 2009a).

⁴¹ The proposed Article 36(3)(d) of the new Electricity Directive (EP 2009a).

⁴² Article 7(7) of the proposed regulation establishing an Agency for the Cooperation of Energy Regulators (EP 2009c).

⁴³ Cf. the system of compensation payments between transmission operators relating to transmission costs due to loop flows, see Article 3 of Regulation 1228/2003.

8. CONCLUSION

The liberalization and restructuring of the electricity industry in Europe have also affected the situation concerning the long-term development of the electricity networks. In this paper we have considered whether the European legal regime for the long-term development of the network is sufficient. In other words, can the function of ‘transport adequacy’ be secured? This question is considered both for the current legal framework as well as for the proposal for a new package of European electricity legislation (the ‘third package’).

Our analysis followed the structure of the FULDA method (proposed in KNOPS 2008). It turned out that the distinction between the sub-functions of planning, on the one hand, and that of decision making about investments, on the other hand, is crucial. It is also relevant to distinguish between distribution, transmission and interconnection. For distribution, the scope of the transport adequacy function is the network itself, whereas for transmission and interconnection the function’s relevant scope is the region, which covers several connected networks and in most cases several countries. In this paper we have focused upon the situation of transport adequacy for transmission networks.

We argued that an explicit responsibility should be imposed for transport adequacy. For transmission and interconnection this has been done in the current Electricity Directive, but for distribution the responsibility is currently more implicit. Thanks to an amendment by the European Parliament this will change with the proposal for a new Electricity Directive, which would solve the current omission.

Another issue that needs to be arranged better, is the relation between the network owner and the network operator and the specification of their respective responsibilities. In the case that the owner and the operator are identical (which should have become the standard case pursuant to the initial legislative proposal by the European Commission), there is no problem. But if they are different entities, the situation is more problematic. The current Electricity Directive imposes the responsibility for transport adequacy upon the network *operator*. If the network operator and owner are affiliated companies it should be ensured that the operator’s planning of the development of the network is effected by the owner (which should *not* withhold any necessary investment, for example to protect its home market), for which the current Directive contains some provisions. Another case is that of the network operator and network owner *not* being affiliated, a case which the current Directive does not deal with. The proposal for a new Directive addresses this situation with the introduction of the ‘independent system operator’. This independent system operator can operate a transmission network that is owned by a vertically integrated electricity undertaking; the independent system operator may not be affiliated to the vertically integrated owner. Pursuant to the draft Directive, the operator would be responsible for the investment planning, whereas the network owner would be obliged to carry out the investments (unless he allows that another party makes the investment). In our assessment we stressed that in this construction sufficient discretion should be left to the network owner with respect to the actual investment decisions. Moreover, it must be ensured that the network owner disposes over sufficient funds to invest. As an alternative to the independent system operator, the European legislator has proposed the independent transmission operator, which can operate a transmission network which is owned by an *affiliated* vertically integrated undertaking. For this case, the proposal for a new Directive aims at strengthening the powers of the operator vis-à-vis its (vertically integrated) parent company. Moreover, independent transmission operators have to prepare and publish 10-year network development plans. It is also proposed that national regulatory authorities should be authorized to ensure that planned investments are carried out. It remains to be seen how effective these measures will be in practice.

Another crucial issue is how the necessary regional coordination for the development of the transmission networks (including interconnection) can be arranged. Here again, the distinction between the sub-functions of ‘planning’ and ‘decision-making’ can be useful. We have proposed that the sub-function of planning could be carried out jointly by the transmission operators in a region, while the investment decisions are still being made by individual transmission operators/owners. This issue has not been arranged in the current European legal framework, but the situation is likely to improve pursuant to the proposal for a new Directive. The European legislator proposes to grant powers to a European Network of Transmission System Operators for Electricity (ENTSO-E, which is

to be established), which should adopt a non-binding EU-wide 10-year network development plan. Moreover, within the ENTSO-E initiatives of regional cooperation and coordination should develop, which would also lead to regional network planning. National regulators should assess whether the national network planning complies with the non-binding EU-wide plan.

The development of regional cooperation with respect to transport adequacy raises the question of what this means for governmental control. Can transmission networks still be regulated at the national level, or is a regional or European approach required? Currently, there are only *national* regulatory authorities for the European electricity sector. The European legislator has proposed to establish an Agency for the Cooperation of Energy Regulators, which should provide an ‘official’ structure for the regional and European cooperation of the national regulators. The Agency should have the power to provide opinions on several matters as well as to take individual decisions in specific, mainly cross-border cases.

Two prominent forms of governmental control with respect to transport adequacy are the review of network development plans and the regulation of the income of network operators (and/or owners). The review of the investment plans remains a task for the national regulator, but the ‘third package’ proposal gives the Agency a role to monitor the EU-wide plan (of ENTSO-E) and the regional cooperation of transmission operators. The regulation of the income of network companies clearly remains a national issue so that the income of the transmission operators in a certain country is collected from the system users in that country. In the context of transport adequacy this may be problematic in these cases where network investments in one country would lead to significant benefits in another country. Neither the current European electricity legislation, nor the draft European legislation provide a solution for this problem. A solution could be to allow for payments from the transmission operator (or owner) in one country to the operator (or owner) in another in order to let the latter make the desired investments. It is, however, difficult to see how national governments could enforce an effective international cooperation of transmission operators in such cases.

Based upon our analysis, we must conclude that the European legal regime concerning the function of transport adequacy for electricity networks is not yet sufficient. A number of issues need to be arranged better, most notably the relation between network operator and owner as well as the regional cooperation and coordination between neighbouring transmission operators. The current proposals for a new package of European energy legislation would bring some improvements, but also raise several new questions. Still, a more careful approach to the relation between network operator and owner is needed. Moreover, the proposal obliges national transmission operators and regulatory authorities to engage in some form of regional cooperation, but this seems only to form the first steps towards effective international coordination. Besides those topics, a relevant issue remains the (lack of) coordination between the development of generation capacity and the network, which has not been treated in this chapter, but nevertheless remains a problematic issue for which neither the current nor the proposed European legal regime for electricity provide a solution. Our final conclusion is therefore that we still need to invest in improving the legal regime concerning the long term development of the electricity infrastructure, in order to design an adequate legal regime to secure the function of transport adequacy.

REFERENCES

- Balmert, D, and G. Brunekreeft (2008), ‘Independent System Operators – The Investment Issue’, in: *Proceedings of the First Annual CRNI Conference*, Brussels, 28 November 2008.
- Barton, B. (2007), ‘The Unhappy State of Energy Regulation in New Zealand’, in: IAEE, *Proceedings of the 30th IAEE International Conference ‘From Restructuring to Sustainability: Energy Policies for the 21st Century’*, 18–21 February, 2007, Wellington, New Zealand: International Association for Energy Economics
- EC (2007a), Proposal of the Commission of the European Communities for a Directive of the European Parliament and the Council amending Directive 2003/54/EC concerning common rules for the internal market in electricity, COM(2007) 528 final.
- EC (2007b), Proposal of the Commission of the European Communities for a Directive of the European Parliament and the Council amending Directive 2003/55/EC concerning common rules for the internal market in natural gas, COM(2007) 529 final.

- EC (2007c), Proposal of the Commission of the European Communities for a Regulation of the European Parliament and the Council establishing an Agency for the Cooperation of Energy Regulators, COM(2007), 530 final.
- EC (2007d), Proposal of the Commission of the European Communities for a Regulation of the European Parliament and the Council amending Regulation (EC) No 1228/2003 on conditions for access to the network for cross-border exchanges in electricity, COM(2007) 531 final.
- EC (2007e), Proposal of the Commission of the European Communities for a Regulation of the European Parliament and the Council amending Regulation (EC) No 1775/2005 on conditions for access to the natural gas transmission networks, COM(2007), 532 final.
- EP (2009a), European Parliament legislative resolution of 22 April 2009 on the Council common position for adopting a directive of the European Parliament and of the Council concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC, see:
<http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P6-TA-2009-0241+0+DOC+XML+V0//EN&language=EN>
- EP (2009b), European Parliament legislative resolution of 22 April 2009 on the Council common position for adopting a regulation of the European Parliament and of the Council on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003, see:
<http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P6-TA-2009-0243+0+DOC+XML+V0//EN&language=EN>
- EP (2009c), European Parliament legislative resolution of 22 April 2009 on the Council common position for adopting a regulation of the European Parliament and of the Council establishing an Agency for the Cooperation of Energy Regulators, see:
<http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P6-TA-2009-0242+0+DOC+XML+V0//EN&language=EN>
- Kirby, B., E. Hirst, and J. Vancoovering (1995), 'Unbundling electric generation and transmission services', *20 Energy*, pp. 1191-1203.
- Knops, H.P.A., and H.M. de Jong (2005), 'Merchant Interconnectors in the European Electricity System', *Journal of Network Industries* 6(4), 2005, pp. 261-293.
- Knops, H.P.A. (2008), *A Functional Legal Design for Reliable Electricity Supply. How technology affects law*, (Ph.D. thesis Delft University of Technology), Antwerp: Intersentia.
- NERC (North American Electric Reliability Corporation; 2008), *Reliability Functional Model*, version 4, to be found at: <www.nerc.com>.
- NordREG (Nordic Energy Regulators; 2006), *A Common Definition of the System Operators' Core Activities*, Report 4/2006.
- OTA (1989), *Electric power wheeling and dealing: technological considerations for increasing competition*, OTA-E-409, Washington D.C.: US Government Printing Office.
- UCTE (Union for the Co-ordination of Transmission of Electricity, 2006), *Interim Report – System Disturbance on 4 November 2006*, to be found at <www.ucte.org>.