

Regulatory Reform in the Dutch Gas Industry

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Abstract:

This paper explores the nature and scope of regulatory reforms in the Dutch gas market since the mid-1990s and the consequences thereof. The liberalization of the Dutch gas industry – in the context of the European developments - resulted in an increasingly dense system of regulation, involving the national government and many other national and supranational actors. Market behaviour evolves in close association with shifts in the market structure and in the regulation of a market, etc. We argue that the design, the implementation and the ‘maintenance’ of regulatory systems are a dynamic learning process, evolving over time. We show that this process is partly driven by the dilemmas regulation has to cope with, like for example, stranded assets, the position of the incumbent *versus* newcomers, technological development, the growth of markets, specific public values and other policy objectives. Yet, we also argue that parallel to these interest related exogenous pressures, a process of endogenous, collective learning was driving the development of a regulatory system (Correljé 2005: 119-123). We illustrate how both the regulator’s actions, as well as firms’ responses and the articulation of public values, are to a certain degree the products of a process of discovery. This development is characterized by some degree of uncertainty and distrust due, at least in part, to a regulatory regime which does not clearly allocate risks and rewards among the actors. Moreover, it is plagued by conceptual, practical as well as political conflicts between the firms in the industry and consumer, or the ‘agents’ , and the multiple national and European authorities, as the ‘principals’.

Regulatory Reform in the Dutch Gas Industry

1. Introduction

This paper explores the nature and scope of regulatory reforms in the Dutch gas market since the mid-1990s and the consequences thereof. Whereas it was expected – or promised initially - liberalization did not go hand in hand with deregulation. As we will show, the liberalization of the Dutch gas industry – in the context of the European developments - resulted in an increasingly dense system of regulation, involving the national government and many other national and supranational actors.

In a previous study (Correljé 2005), we addressed the heated discussion about the development of the Dutch regulatory framework for the gas industry. We argued that the simple qualification ‘right’ or ‘wrong’, in respect of specific choices made regarding the market and ownership structure and the regulatory approach were based on a misunderstanding of the nature of this development. As we argued, this misunderstanding was based on the assumption that that exist ‘of-the shelf’ regulatory packages, including a choice of instruments that, if the right parameters are employed, yield the preferred behaviour in terms of supply, demand and prices (see Aalbers *et al* 2002).

We also assumed that market behaviour evolves in close association with shifts in the market structure and in the regulation of a market, etc. But, in contrast to the ‘of-the-shelf’ approach, we argued that the design, the implementation and the ‘maintenance’ of regulatory systems are a dynamic learning process, evolving over time.

We showed that this process is partly driven by the dilemmas regulation has to cope with, like for example, stranded assets, the position of the incumbent *versus* newcomers, technological development, the growth of markets, specific public values and other policy objectives. Solving these dilemmas requires adjustments to the scope, the scale and the approach of regulation and takes place under influence of actions taken by stakeholders in the industry, governments, European, national and local political representative bodies, labour unions, consumers organizations, NGOs, research institutes and consultancies, etc. (see Baldwin and Cave 1999).

Yet, we also argued that parallel to these interest related exogenous pressures, a process of endogenous, collective learning was driving the development of a regulatory system (Correljé 2005: 119-123). In the analysis of the post-1990 development of the Dutch regulatory framework, it was shown that the main actors,

i.e. the firms in the industry, the regulator and the political realm gain new insights time and again and use these insights to optimise their behaviour in the context of their newly perceived context. We interpreted the emergence of the regulatory framework as a sequence of ‘discoveries’, unraveling step by step the set of technical and economic functionalities of the gas supply system. Until the mid-1990 these functionalities had been embedded, or internalized, within the overall gas supply structure of the Nam/Gasunie public-private partnership. Yet, once the Dutch government began to dismantle this structure, they began to ‘escape’ from the framework. Of course, the plight of the regulator, DTe, became to re-internalize these functionalities in a newly established framework, based on the paradigm of free market coordination.

We illustrated how both the regulator’s actions, as well as firms’ responses and the articulation of public values, are to a certain degree the products of a process of discovery. Indeed, these ‘discoveries’ did arise from the way regulatory frameworks are founded upon neo-classical and Austrian economic theories, their narrow focus on specific sets of issues, their inherent incompleteness in the real world and the continuous detection of new, previously undefined, facets that have to be incorporated in the regulatory system. This perspective enabled us to understand why the process of regulation would never be ‘finished’; why the policy-maker and the regulator would always be ‘too late’ or ‘incomplete’ in capturing and modifying the industry’s behaviour, why some firms thus benefit more than others and why new *public values* keep on showing up.

A recent study (Hancher, Dicke, Correljé: forthcoming 2008) particularly the way in which these pre-existing or emerging public values are being dealt with in liberalized infrastructures, and in the gas market in particular. Liberalisation of the energy market, in combination with ownership unbundling and shifts in public/private ownership relations has turned the management of the electricity and gas sectors into a series of *splintered* transactions. This study illustrated how the divergent interests of all different actors in the sector have led to contested public values, which are pursued on multiple national, EU-wide and regional levels. Market integration and commercialization resulted in a growth of trade within and between the Member States, raising the pressure to further develop existing networks, cross-border interconnector capacity and other facilities.

It was shown how institutional integration seems to be turning the transfer of some key competences to the European level into an imminent reality. Regulatory or institutional integration is necessary not only to underpin the functioning of the market, but also to guarantee technical operation and physical integration. Moreover, in achieving security of energy supply and meeting the challenges of climate change, the current form of regulation has its limits, and in this is expressly acknowledged in the European Commission's third package, suggestion new, far reaching transfers of responsibility and authority to the EU level. This development, again, is characterized by some degree of uncertainty and distrust due, at least in part, to a regulatory regime which does not clearly allocate risks and rewards among the actors. Moreover, it is plagued by conceptual, practical as well as political conflicts between the firms in the industry and consumer, or the 'agents', and the multiple national and European authorities, as the 'principals'.

A further elaboration of this evolutionary perspective will be undertaken in Section 2 below. Section 3 will briefly sketch the sequence of key governance paradigms in network sectors. Section 4 will evaluate the post-1996 process of regulation of the Dutch natural gas industry. Section 5 will interpret this evolution and is followed by some concluding remarks.

2. A (new) Regulatory Framework for the Netherlands' Gas Industry

Traditionally, the Dutch electricity and gas sectors were characterised by a highly integrated and centrally co-ordinated structure in which the industry enjoyed exclusive rights to supply their 'captive customers' and to import and export power and gas. In exchange for this exclusivity, these companies were entrusted with various public service obligations and duties – to ensure secure and reliable supply at acceptable cost to the various categories of users and to guarantee power connections and supply to consumers on demand. Natural gas was supplied when a connection was economically 'justified'. Whereas public ownership by municipalities and provinces was the rule in the electricity sector, ownership of the gas sector was a more complex interdependency of public and private actors in the so-called 'Gasgebouw' structure that was established following the discovery of the Groningen gas field in the 1950s¹. Gas was supplied at prices reflecting the equivalent costs of the use of oil

¹ Most of the gas production concessions constitute of a 50/50 public/private partnership, involving Energie Beheer Nederland (EBN) and consortia of private firms. Gasunie - the single wholesale

products. Prices were subject to a limited degree of ministerial control. The gas companies were able to pass on the costs of new investments directly to their customers, who had no alternative but to accept the tariffs as a given. Furthermore these tariffs were 'bundled' – a consumer paid a combined tariff for transportation and distribution and the fuel component. After a period of discussion and government internal deliberation on the organization of the energy sector, the actual liberalisation of the Dutch gas market took off with the presentation of Minister Wijers' Third White Paper on Energy, by the end of 1995 (MEZ 1995). The Dutch approach also foresaw a partial privatization of the industry. The Electricity (1998) and Gas Act (2000) and later amendments formalized a thorough restructuring of the sector and introduced formal freedom of choice for all consumers by July 2004.

The following sections will highlight a number of specific aspects in the process of restructuring. From the 1990s onwards, as is observed in section 4.1, there is a gradually expanding set of actors and parties actively involved in the discussion around the restructuring. Sections 4.2 to 4.4 trace the continuous growth in the elements of the gas supply system that were to be *regulated*, looking at the formal manifestation of the restructuring of the Dutch gas sector. This involved a sequence of rules, consisting of the two EU Gas directives and a number of regulations; the two Dutch Gas Laws and a number of revisions and decrees (AMVBs); the consecutive Guidelines for the execution of the Gas Law, plus Decisions and Licenses for specific firms, by the DTe, the Dutch regulatory agency; and a series of operative rules and procedures by Gasunie and the local distribution networks, owned by Nuon, Essent, Delta and Eneco. The more informal elements of this process of restructuring are much more difficult to identify, as these involve the strategies and interaction of the several actors involved. Nevertheless, to a certain extent these elements can be observed in their contributions to consultation procedures, in reactions in the press and in lobbying activities.

It will become clear that, on the one hand, there is an expansion in the number of elements of the system that are to be re-framed, either in the formal meaning of being

gas trader and exporter and owner of the national gas transmission system - was jointly owned by Shell and Exxon (50%) and the Dutch state (10%) and EBN (40%). In the up-stream gas production, national and export pricing practices were meant to yield the opportunity values, as set by the value of alternative fuels, like heating oil and fuel oil. A share of about 70% of the profits, or more, was transferred to the State, as the 'Gasbaten. See Correljé, A.F., Van Der Linde, J.C., Westerwoudt, T. (2003), *Natural Gas in the Netherlands: From cooperation to competition?*, Clingendael International Energy Programme/Oranje Nassau, CIEP, The Hague.

regulated, or in the way of being covered by the firms' business routines (see Nelson and Sampat 2001: 42-47). On the other hand, an increasing degree of detail seems to be required in the way the operation of the system is to be regulated. Many aspects that had been arranged more or less informally via self-regulation between the State, Gasunie and the distributors, now appeared to require formal, explicit, rules, procedures and standards.

3 The actors involved

Traditionally, four main types of actors were involved in the Dutch gas industry (see MEZ 1962). These involved, firstly, the Dutch *State* (represented via the Ministries of Economic Affairs and Finance and as a shareholder in Gasunie and Energie Beheer Nederland (EBN)). Secondly, there were the *oil companies*, including Exxon and Shell, via their joint venture the Nederlandse Aardolie Maatschappij (NAM) and as a shareholder in Gasunie, and a number of other gas producing companies active in a range of concessions, jointly with EBN. Thirdly, there were 20 or so local *distribution companies* in the Netherlands, represented by Energiened, selling the gas to Dutch consumers. Fourthly, a few foreign transmission companies and utilities were involved in importing of gas from the Netherlands, including Ruhrgas, Distrigaz, Gas de France, SNAM, etc. After a turbulent period of the 1970s, contacts and negotiations between these several interests had been maintained within a relatively stable, well-organized framework, shielded from all too direct political and societal involvement (Correljé *et al* 2003b; Roggenkamp and Bos 2001).

The post-1995 restructuring and opening of the industry brought a range of other actors into the Dutch gas sector. Some of these actors were genuinely new, while others simply gained a different, more outspoken, international position. The main consequences of this restructuring were that the operation of the national as well as the regional networks was separated from the production and supply companies in the gas sector. National gas transmission functions became the responsibility of the Transmission System Operator (TSOs), Gas Transport Services (GTS)². The

² GTS is responsible for the management, the operation and the development of the national transmission grid on an economic basis. GTS main regulated services are: 1) to create and maintains connections to its about 50 'entry' and 1,100 'exit' points. At an entry point the gas can be physically injected in the system. At an exit point the gas can be physically removed from the system, to supply a regional gas network, a large consumer or an export station; 2) to provide and ensure sufficient transport capacity to its shippers; 3) to balance the grid; 4) to provide quality conversion and flexibility services. On behalf of its public tasks, GTS is responsible for security of

traditional Gasunie was split up in Gasterra, continuing its gas trading activities as a joint venture of Shell, ExxonMobil and the Dutch State, while GTS and some other assets were assembled in a *new* Gasunie. The ownership of the new Gasunie was transferred to the Ministry of Finance. This restructuring has had important consequences as will be shown below in an account of the investments in the gas network.

The regime change also introduced important changes in the governance of the sector, which now falls under the authority of three Ministries. The Ministry of Economic Affairs has general policy responsibility for Dutch energy supply, including consumer and competition issues. Within it, the Department of Energy has been merged into the Department of Energy and Telecom, reflecting more pronounced market. Every four years, the Minister issues the *Energierapport*, setting the priorities for the next period. Moreover, the Ministry is in charge of collecting the state revenues from gas production; the ‘gasbaten’ The Ministry of Housing, Spatial Planning and Environment (VROM) has the responsibility for environmental and spatial planning issues involved in the operation of the energy sector. The Ministry of Finance now holds the shares in the national network companies, TenneT and Gasunie and requires a ‘normal’ commercial dividend on its shareholding in both networks. A fourth department that has been gaining influence in energy policy is the Ministry of Foreign Affairs. It is especially involved in the broader field of the European energy policy, dealing with substantial energy related issues and the link with climate change policy and the increasingly important function of developing energy relations with third countries, external to the EU³.

The 1998 Electricity Act created a regulator, DTe, which subsequently also assumed responsibility for the regulation of the gas sector under the direction of the Minister of Economic Affairs. In July 2005 the DTe became a ‘chamber’ of the Dutch Competition Authority (the NMa). With regard to the enforcement of the Gas Act 2000, in addition to various advisory and monitoring tasks, DTe was specifically

supply issues, including peak-period delivery and supplier of last resort deliveries and the supply in extreme cold weather conditions. It also facilitates the small-fields policy, involving the extraction of natural gas from small fields. GTS is not allowed to carry out activities such as production, delivery or purchase of gas by means of which it enters into competition with other parties unless this relates to the performance of activities for the legal tasks. (see <http://www.gastransportservices.com/corporate/518325>)

³ The roles of these departments in energy policy making is supported and facilitated by a number of (national) research institutes, councils and other advisory bodies, like CPB, ECN, RIVM, and the Energy Council.

charged with, inter alia, the duty⁴ to determine guidelines for tariffs and conditions with regard to access to gas transmission pipelines and gas storage installations and, if necessary, to issue binding instructions;

A number of public service obligations or public values in relation to gas supply have been provided in the Gas Act. GTS and the regional networks have the responsibility to operate, maintain and develop their installations in an efficient, safe, reliable and environmentally friendly manner. GTS have the statutory duties to provide a certain degree of security of supply and security of transportation, explicitly referring to the protection of domestic customers in the event of default of suppliers or failure of production and transmission capacity.⁵ Production companies are no longer subject to any public service obligations, but the DTe is now primarily responsible for ex post monitoring of compliance with the conditions of the supply licences which all energy companies supplying directly to small consumers must obtain in advance⁶.

The regime change has deliberately induced the unbundling of potentially competitive production, trading and supply activities from infrastructure management. Moreover, as regards the several competitive activities, a host of new firms has entered the market. Finally, the disaggregation of the energy sector and the pattern of governance resulting from the regime change have stimulated the emergence of a large number of new secondary organizations of a diverse nature. These organizations provide input into the ongoing societal debates on the restructuring of the power and the gas industry, the environmental challenge, consumer and business interests, security of energy supply, etc. In part they are driven by their alignment with specific primary actors (generators, traders etc) and in part by their technical expertise and or broader societal conviction.

4. New markets and new transactions: An Evolution in Six Rounds

As has been shown in detail in Correljé (2005) a series of landmark actions took place in the gas sector that clearly illustrated the reflexive and evolutionary character of the process of regulation - within the context of a genuine conflict of interest between incumbent parties and new entrants, of course. In this paragraph we provide an

⁴ Source: http://www.dte.nl/engels/about_dte/dtes_mission/Tasks/index.asp

⁵ Besluit Leveringszekerheid Gaswet Staatscourant, 2004, Nr 170.

⁶ The NMa/DTE participates actively in the informal European Stakeholders Forums as well as the European energy regulators network (CEER) and the European Energy Regulators group (ERGEG), discussed above in chapter 4

overview of the six rounds, focusing on the interaction between the way in which DTe contemplated and formulated its *Guidelines* as from 2000 onward, and the manner in which the sector, particularly Gasunie, adjusted its regime for trading and network access⁵ and revised its business practices and routines. Finally we will address the discussion between DTe and GTS about on the longer term development of the transmission network and the development of a framework for underground gas and CO₂ storage.

The First Round: Unbundling the Past

According to the 1st EU Gas Directive and the Gas Act, Gasunie would have to provide negotiated access to its system. In 1998, it made a first move by introducing its *Commodity Services System* (CCS). This system established separate tariff components for the different elements of a gas transaction, like the volume of gas supplied (commodity charge), the contracted transport (transport charge) and handling capacity (capacity charge) and the location of entry into the Gasunie system (distance charge). It did *not* provide for the separate purchase of these components, however (Gasunie 1989). This proposal was followed by tough discussions between Gasunie and its customers. Main question arose, for example, as to whether a *cost-plus* or a *market price* based pricing principle should prevail, about the duration of the contracts for the separate elements and the question as to whether these elements could be provided on a separate basis.

The Second Round: Setting the Scene

In August 2000, DTe published its *Temporarily Guidelines 2001* for gas transport and gas storage, outlining principles, conditions and tariffs structures for access to these facilities in a rather schematic manner (DTe 2000). DTe made clear that these guidelines would only be provisional; to be substituted the next year by a *definitive* version, as main elements still had to be developed. The *Guidelines 2001* contained a limited number of issues. Gasunie was required to separate its services into *basic* and *special* services, while establishing an indicative cost based tariff structure for basic services, like transmission and balancing, quality conversion and gas storage. Negotiations had to be concluded within *reasonable* period, while the *most favoured tariff* clause would apply. Reacting to these Guidelines, by January 2001, Gasunie announced a set of measures which, beside a 6.5% lowering of tariffs for transport

services, included, firstly the voluntarily dismantlement of the prevailing CSS system of tariffs and, secondly, the partition of its activities into two entities, the one taking care of transport services and the other undertaking trade and supply (Gasunie 2001; EB 2001, No 1).

The Third Round: Conflict and Struggle

In June 2001, the presentation of the DTe consultation document for the Guidelines 2002 announced the third round of restructuring, developing more advanced regulatory notions (DTe 2001a; BET 2001). A number of requirements were formulated. In August 2001, the Guidelines for Transport and Storage 2002 (DTe 2001b, c) were published and included most of the elements announced in the consultation document, earlier that year. Only the entry-exit approach for network access was postponed until 2003. Eventually, in December 2001, Gasunie and the other network operators were given a *binding instruction* (DTe 2002a). Therewith DTe forced GTS: a) to reduce its tariffs by 5% annually over the period up to 2005, b) to provide information on the available entry and exit capacities, c) to set-up a balancing regime and an entry-exit based tariff system, d) to provide indicative tariffs for short term transport contracts based on *efficient economic costs*, and e) to implement a back-haul regime (EB 2002, no. 1, 6). A month later, GTS gave in under protest and adjusted its tariffs, while it made daily supply contracts available (EB 2002, no. 2, 7). In the meantime, though, persistent complaints were heard from consumers and the traders' interest organisations, that GTS did not provide any unbundled flexibility to the shippers, but only simple transport services.

The Fourth Round: New Contours

By July 2002, DTe published draft Guidelines for transport and for storage 2003 (DTe 2002b,c). Following upon a study on storage issues (Brattle 2002), this draft contained a more developed - as compared to earlier concepts - proposal for a National Balancing Point (BNP), a virtual point in the grid, at which all gas within the system could be traded between the shippers. Another important aspect was the request for short-duration transport contract (1 hour), in line with GTS' hourly balancing requirements. The discussion on cost-plus *versus* market as the basis for transport tariffs was continued, but not solved. Yet, in its *binding decision*, DTe (2002a, 25) admitted that GTS might be in position in which the cost-plus approach

would induce perverse gas flows through the Dutch system, as was maintained in a study carried out for Gasunie (Jepma 2001). GTS announced the introduction of an entry-exit tariff system with only a moderate impact of distances, in combination with the provision of a short-term and a short-haul transport service, essentially along the lines of DTe's wishes. In addition to this, GTS introduced the *Title Transfer Facility* (TTF), through which shippers would be allowed to trade volumes of gas plus required transport service when these volumes were already in the transmission network. Other important features that came into development were a secondary market for transport contracts, interruptible transport services and access to quality conversion facilities.

The Fifth Round: The Devil is in the Detail

Nevertheless, a number of fundamental impediments remained in place, as was concluded in a report by the Brattle consultancy, hired by DTe. Brattle had identified four main problems to shippers who wished to serve the small customers in 2004. Firstly, there was no access to quality conversion facilities to convert H-gas to L-gas, as most of the capacity was dedicated to Gasunie. Indeed, until 2009 all capacity was hired (EB, 2004, no. 5, 7). Secondly, there was difficult access to flexibility services, like storage capacity, line-pack, or flexible production. Thirdly, there was lack of firm import capacity to import H-Gas from neighbouring countries. Fourthly, even if competing H-Gas suppliers would obtain the required import capacity, quality conversion capacity, and tolerance services, these suppliers would not be able to offer a reliability comparable to that of the Groningen field (The Brattle Group 2003; EB 2003, no. 7, 1, 3). By early 2004, DTe took over most of these conclusions, and added its own evaluation and proposals to adjust the Guidelines for 2005. It also explicitly asked interested parties to react on the information and questions presented. Interestingly, for quite a few of the observed problems, no solutions could be formulated, as yet (DTe, 2004a; EB 2004, no. 2, 2).

In response to the new Guidelines, GTS published its Tariff Statement for 2005 (GTS, 2004). The position of GTS had changed, as it had become the Dutch TSO, operating legally independent from Gasunie NV, with its own Council of Commissioners. The network, however, remained an asset owned by Gasunie, while Gasunie Technology and Assets would undertake its maintenance and expansion. Main elements to the statement were the socialisation of the variable cost of conversion in the entry tariffs,

although there was no conversion capacity available. Moreover, there was an adjustment and a stabilization of the connection fee, which had been calculated on a capacity relative basis, until then. Further elements were a reduction of the nomination time to the day-ahead trade and the announcement that there would be a shift in the measurement units from standard cubic meters to kWh. In the mean time, discussions are taking place on the establishment a spot market, operated by APX, and executed by GTS on the Title Transfer Facility (TTF) (EB, 2004, no. 9, 7).

The Sixth Round: Tariffs and networks investment.

As compared to access and tariff regulation, the regulatory framework for the governance of network investments is much less developed⁷. These transactions are being dealt with on an ad hoc basis, under a considerable degree of uncertainty and regulatory reservation. Moreover, it is in these infrastructure-related transactions that the problem of applying short term economic efficiency principles – the basis of the current regulatory approach – emerges to its fullest extent. It is a vacuum of realistic rules and stable signposts for longer term investment that is jeopardizing the longer term development of adequate infrastructural systems for an efficient, sustainable and reliable energy supply.

As regards the national gas and electricity transmission systems, DTe has an indirect influence over investment strategies through its power to accept or reject the network operators' proposals for the regulation of tariffs. GTS has the mandate to invest in network expansion, if that is deemed necessary and economically justified. Decisions to invest are the responsibility of the management. Yet, the current system of revenue regulation implies that these new investments will have to be accepted by DTe in the so-called Regulatory Asset Base (RBA); the basis for the allowable revenues and user tariffs. Any expansion of the networks is evaluated by DTe, on the basis of its economically efficient contribution to the supply of gas to the Dutch consumers⁸. If the judgement is positive, the costs of the investment can be socialized in the tariffs.

⁷ See also Shuttleworth, G. (2008) Three Measures to help Ownership Unbundling Achieving its Goals, Nera Energy Regulation Insights, Issue 35, January 2008.

⁸ The planning criteria for the design of the TSO grids are set out in the Grid Code, which must be approved by the regulator. Since December 2005, the TSO must also publish a Quality and Capacity Plan which must meet the criteria laid down in relevant Ministerial regulations in relation to quality aspects for Electricity Grid and Gas Network management. The regulator is empowered to assess these plans. This planning process also applies to the DSOs (see Art 4 EW and Art 5 GW).

Eventually, the board of GTS checks the commercial justification of the investments, taking into consideration the returns on investment set required by the Ministry of Finance.

Although there is scope within the current method of energy network regulation for the regulator to allow additional income to reward an 'exceptional' investment, this system is currently based on an *ex post* and not an *ex ante* evaluation by the regulator. This is a consequence of the logic of the G Act which provides that the tariffs are based on a number of elements and that these relate to costs and benefits in a particular regulatory period. Hence the costs for a large investment can only be taken into account if the benefits are also apparent and as such, the regulatory system creates uncertainty as to whether the network operators (national and regional) will be allowed to claim a higher tariff and recoup the necessary investment and to socialise these costs.

There are 'exceptional' situations in which investors, including GTS, may opt for an exemption of their specific infrastructure investments from the DTe tariff and access regulation. In essence, this involves situations in which the investors consider the regulatory regime not appropriate in the face of the risk involved. Under conditions, shaped by the amount of risk involved and the potential infringement of competition, the national regulator may allow firms to engage in long term contracts for the use of these facilities at unregulated, i.e. negotiated, tariffs. These new infrastructural investments involve LNG and storage facilities, as well as cross border interconnectors where more than one regulatory regime is involved. The investment risk must be 'ring-fenced' and the costs, as well as the eventual revenues, accrue to separate companies set up for the purpose of developing the project. Eventually, these exemptions by the regulator are subject to the approval of the European Commission. This particular regulatory and ownership pattern creates a complex principal-agent relationship between the TSO, the regulator, the Ministry of Finance and the Ministry of Economic Affairs and the customers of the TSOs, in which diverging objectives, values and criteria for justification easily conflict, as will be shown below. Generally, investment decisions are primarily based on financial-economic criteria. Even if broader societal objectives like security of supply are pursued, regulatory scrutiny and approval will reflect criteria which are primarily market based and oriented towards the short term objective of securing lower tariffs to Dutch consumers (see Hancher, Dicke, Correljé 2008).

The Seventh Round: Underground Storages.

A recent new development concerns the future development of the use of the Dutch subsoil for the storage of natural gas and CO₂ and the associated need to facilitate the construction of a transport infrastructure. Whereas the development of underground gas storage (UGS) and CO₂ storage are, so far, treated as separate issues in the policy and regulatory debate, in fact they are not. Decisions on the use of empty gas reservoirs, the development of the associated infrastructures and the governance of these are strongly related. Struggles between different ways of conceptualization of particular facets, like substitutes, access, competition, legal ownership and control, etc., causes uncertainties and delay in investments. 'New' policy issues may become rather complex, as they connect activities areas, actors and bodies of rules that, so far, have existed relatively unconnected. Indeed, this often involves a technical, an economic and an institutional co-ordination. The establishment of a regime for the conversion of (partly) depleted gas fields into underground gas storages and their operation becomes an extremely complicated matter, particular if a coherent vision is lacking.

5. Interpretation

It was shown that the restructuring of the Dutch gas sector went hand in hand with the growth of an increasingly detailed body of regulation, to implement the broadly formulated provisions of the EU directives of 1998 and 2004, via the Dutch Gas Acts of 2000 and 2004 into the DTe Guidelines and the Gasunie Tariff statements, which set the scene for specific business routines. Each subsequent edition of these sets of rules covered more aspects at a higher degree of fine-tuning than its predecessor, thus providing an increasingly stringent formulation of the regulatory approaches and instruments to be applied. In terms of the theoretical perspective, outlined in Correljé (2005), the emergence of this body of regulation can be understood and explained, in part, as a sequence of 'discoveries'. Using Callon's framework (1998b), we distinguish the following stylised steps in this process of (re)framing: 1) the identification of external effects, i.e. unframed functions and aspects; 2) identification of actors involved and their roles; 3) measurement of perceived externalities and their valuation; and 4) negotiations for a revised frame, i.e. the new regulatory approach. Transactions within the new framework, thereupon, yielded new experiences and

insights that drove a new round of framing, as the incentives were found to be sufficient. The essential conclusion is that the process of regulation is not - and cannot be – a one-shot exercise. It will be an ongoing series of sequences.

In respect of the *first* step, the identification of unframed functions and aspects, it is argued that in the traditional system, generic functionalities of the gas system, like transport, the provision of hourly, daily and seasonal flexibility and the adjustment of gas quality had been embedded, or framed in Callon's terms, within the overall framework and business routines of the public-private partnership around Gasunie. Yet, once the Dutch government began to dismantle this structure post-1996, step by step, these complex technical, economic and commercial functionalities of the pre-existing gas supply system were unraveled. These functions began to 'escape' from the old framework as external aspects. It became the plight of the actors involved to re-frame these aspects in the newly emerging system, based on the 'competitive' market paradigm, as outlined in the EU Directives and the Gas Acts, supervised by DTe. Hence, a 'well-functioning', efficient, self-coordinating gas market was expected to evolve. Reframing in the context of this system occurred only gradually, via the DTe Guidelines, the GTS access regime and via the private storage and other activities by actors in the market, in a continuing discussion between the several actors.

In respect of the *second* step, it was observed above that the new system implicated an expanding set of actors, as compared to the initial situation. With this, came an increasingly complex set of actor perspectives, as regards their roles in the market and their perceptions of the measurement and valuation of the functionalities to be framed. The question of the identification of issues of relevance became highly associated with the evolution of the actors' perspectives – and thus of their investments.

Gradually, actors moved from a rather schematic, economic textbook-like, perspective of the market - with all sorts of untested theoretical assumptions – towards a more realistic real world perspective on the operation of the Dutch gas supply system, and their role therein. The several external advisors and consultants played interesting roles in underscoring and gaining acceptance for the principles and attributes of the regulatory concepts advanced by the several parties, or by making the experiences in other markets available to the Dutch scene (see for example Jacobs Consultancy 2001, 2004; Brattle 2000, 2003; Jepma *et al* 2001). By means of investing in such studies,

DTe, Gasunie and others, obviously did influence the process of institution building, à la North and Callon.

In respect of the *third* step, the measurement and valuation, the discussion that arose between Gasunie, DTe, and the shippers was about the way in which the technical and economic functionalities of the Dutch gas system were identified and given shape institutionally and about the way the economic costs and rents would be divided over the parties. The public hearings organized by DTe, around the Guidelines and the allegations submitted by the several parties, illustrated that the outcome of the debate on the restructuring – by definition – never could have been satisfying to all, as fundamental conflicts of interest were at stake. Nevertheless, a process of learning and conciliation made the actors aware of the broader perspective. Initially, new entrants' lobbying organizations, independent traders and large consumers chose to depict transport, the provision of flexibility and the adjustment of gas quality as essential facilities controlled by the incumbent, the access to which thus had to be regulated on a cost-plus basis. They shared this perspective with DTe, taking for granted that the current transport, storage and treatment capacity was sufficient. Also the task of technical and long-term economic coordination was considered an unproblematic responsibility of GTS. This implied that long-term system integrity, essentially, did become external to the overall framework of coordination.

So, a complicated discussion arose about the functionality, the divisibility and the valuation of the several services and facilities in the system, like the provision of hourly, daily and seasonal flexibility, the role of the different balancing, storage and blending facilities in the value chain, the procedures to set priorities in transport and capacity allocation, the costing and funding approaches, etc.

A final factor, although not discussed in detail in this analysis, was that the role of the Dutch Parliament became increasingly important; it added a large number of elements to the regulatory structure, via amendments to the proposed Gas Act and subsequent 'reparations' to the Electricity and the Gas Acts. Increasingly, these elements were related with security of supply issues and protection of the position of the captive consumers. It constitutes a clear example of the reintegration of elements of the traditional 'public values', into the newly established market-based system, upon discovering – or just being worried - that this system is unable to take these issues in account adequately.

6. Conclusion

A fascinating aspect constitutes the evolution of the notion of the market as a coordinative device, often depicted as ‘the invisible hand’. In the context of the complex Dutch gas system, apparently the expanding requirements of market and system information, to facilitate its coordination, made the coordinative mechanism step-by-step more visible and explicit. This enhanced insight, eventually, brought the rather divergent initial views together, highlighting and framing the newly emerging relationships between the several parties, as can be observed in the more recent stages of the process. It, of course, also inspired new controversies.

It was also illustrated how regime change has caused splintered transactions, both in respect of the split between the commodity and the transport and services necessary to deliver, and the long term development of the systems. Every ‘simple’ commodity transaction involving the supply of power or gas to a customer requires a complex chain of associated tailor made transactions for transport, handling and ancillary services. Regime change has introduced a different logic for the technical and economic coordination of the activities in the industry, in respect of both short term commercial transactions as well as its longer term development. The negotiated agreements of the past have been replaced by the competitive logic of the market, bringing in commercial rivalry and economic incentives as predominant drivers for the behaviour of economic actors. This may causes difficulties and transaction costs in the day-to-day execution of energy trade, requiring an interrelated set of commodity, transport and services transactions, involving several parties with differing objectives.

The framework for the governance of network investments is not well developed, as yet. The principle of actual historical cost underlies the regulatory rationale for revenue allowance, tariff setting and remuneration of existing infrastructure. Future expansion and adjustment of the networks requires the operationalization of some notion of *long run* marginal costs and revenues, given the specific objectives of network development and the evaluation thereof. It would reflect the investors’ and users’ perception of the value generated, as compared to the risk involved. As demonstrated, large practical and conceptual difficulties make it hard to reach agreement on these objectives, the investments required and the (e)valuation thereof by investors, users and the regulator.

This process is characterized by fundamental uncertainties and strategic behaviour of owners, operators, customers, regulators and policymakers. Within an environment of commercial and strategic rivalry and distrust among the firms in the industry, public entities like the Ministries, the Regulator and the TSOs, and the wide range of secondary actors, decision making on the development and operation of new infrastructures is problematic and controversial. Emerging objectives, values and technical and commercial principles and practices are easily contested and politicized.

References:

- Aalbers, R., Dijkgraaf, E., Varkevisser, M., Vollebergh, H.R.J. (2002) *Welvaart en de regulering van netwerksectoren*. 02 ME 12, Den Haag: Ministerie van Economische Zaken.
- Baldwin, R., Cave, M. (1999) *Understanding Regulation: Theory, Strategy and Practice*. Oxford: Oxford University Press.
- Callon, M. (1998a) Introduction: The Embeddedness of economic markets in economics. In M. Callon (ed.) *The Laws of the Markets*, The Sociological Review, Oxford: Blackwell Publishers.
- Callon, M. (1998b) An essay on framing and overflowing: economic externalities revisited by sociology. In M. Callon (ed.) *The Laws of the Markets*, The Sociological Review, Oxford: Blackwell Publishers.
- Correljé, A.F. (1997) Naar nieuwe verhoudingen in het energiebeleid. In W. Hout, M. Sie Dhian Ho (eds.) *Aanpassing onder druk: Nederland en de gevolgen van de internationalisering*, Assen: Van Gorcum, pp. 165-178.
- Correljé, A.F. (2001) Dutch Natural Gas in Europe: Towards a competitive market? In: M. M. Roggenkamp, J.A.M. Bos (eds.), *Energieliberatisatie in Nederland*, Antwerpen/Groningen Intersentia Rechtswetenschappen, pp. 1-14.
- Correljé, A.F., de Jong, D., van der Linde, J.G., Thönjes, C., Westerwoudt, T. (2003a) *The case for gas is not self-fulfilling*, CIEP 01/2003, The Hague: Clingendael International Energy Programme.
- Correljé, A.F. Van Der Linde, J.C., Westerwoudt, T. (2003b), *Natural Gas in the Netherlands: From cooperation to competition?* The Hague: Clingendael International Energy Programme/Oranje Nassau.
- Correljé, A.F. (2004) Markets for Natural Gas. In C. Cleveland (ed.) *Encyclopedia of Energy Volume 3*. Amsterdam: Academic Press Reference Series, Elsevier Science, pp. 799-808.
- Correljé (2008) Dilemmas in Network Regulation: The Dutch Gas Industry. In: R. Künneke J. Groenewegen, A. Correljé (eds.) *Innovations in liberalized network industries: Between private initiatives and public interest*, Edward Elgar.
- DG TREN (2004) Note of the DG Energy & Transport On Directives 2003/54-55 and Regulation 1228/03 in the Electricity and Gas Internal Market
- DTe (2000) *Tijdelijke Richtlijnen 2001*, DTe., Den Haag, augustus 2000.
- DTe (2001a) *Richtlijnen Gaswet Consultatie- en informatiedocument 2001*, Den Haag: Dienst Toezicht Energiesector, juni 2001.
- DTe (2001b) *Richtlijnen Gas transport 2002*, Den Haag: Dienst Toezicht Energiesector, augustus 2001.
- DTe (2001c) *Richtlijnen Gasopslag 2002* Den Haag: Dienst Toezicht Energiesector, augustus 2001.
- DTe (2002a) *Bindende Aanwijzing 100554/15* Den Haag: Dienst Toezicht Energiesector.
- DTe (2002b) *Ontwerp Richtlijn Gastransport 2003* Den Haag: Dienst Toezicht Energiesector.
- DTe (2002c) *Ontwerp Richtlijnen Gasopslag 2003* Den Haag: Dienst Toezicht Energiesector.
- DTe (2002d) *Richtlijn Gastransport 2003* Den Haag: Dienst Toezicht Energiesector.
- DTe (2002e) *Richtlijn Gasopslag 2003* Den Haag: Dienst Toezicht Energiesector.
- DTe (2004a) *Onderzoek Ontwikkeling Gasmarkt, Informatie- en consultatie document*, Den Haag: Dienst Toezicht Energiesector, Januari 2004.
- DTe (2004b), *Toelichting Ontwerp-Richtlijnen Gastransport 2005*, Den Haag: Dienst Toezicht Energiesector.
- DTe (2004c), *Ontwerp-Richtlijnen Gastransport 2005* Den Haag: Dienst Toezicht Energiesector.

- DTe (2004d), *Toelichting op Wijziging Richtlijnen Gastransport 2005* Den Haag: Dienst Toezicht Energiesector.
- DTe (2004e), *Richtlijnen Gastransport 2005* Den Haag: Dienst Toezicht Energiesector.
- EB 1996-2004 *Energiebeurs Bulletin: onafhankelijk nieuws- en opinieblad over de energiemarkt*, F&B, Hilversum.
- Gasunie (1989) *Commodity Services System*. <[HTTP://www.gasunie.nl/ccs](http://www.gasunie.nl/ccs)>
- GTS (2001) *Indicatieve tarieven en voorwaarden voor transport en noodzakelijkerwijs daarmee verbonden diensten 2002* Groningen: Gasunie Transport Services, 28 september 2001.
- GTS (2002a) *Hoofdlijnen Transporttarieven 2003*. Groningen: Gasunie Transport Services, 7 mei 2002: http://www.gastransport.nl/_nl/tt/2003/actualiteit/2002/Tekst%20brief%20aan%20DTe.pdf
- GTS (2002b) *Nadere invulling en detaillering Transporttarieven 2003*. Groningen: Gasunie Transport Services, 19 juli 2002: http://www.gastransport.nl/_nl/tt/pdf/2002-07-12%20Transporttarieven%202003%20ev%20_ned-website_.pdf
- Haaland Matlary, J. (1997) *Energy policy in the European Union*. Houndmills: Macmillan.
- Hancher, Dicke, Correljé: forthcoming 2008**
- Jacobs Consultancy (2001) *NON-CONFIDENTIAL VERSION OF Evaluation of Gasunie Balancing Regime Part 2*. Leiden: The Jacobs Consultancy Nederland, 28 September 2001
- Ministerie van Economische Zaken (MEZ) (1962) *Nota inzake het aardgas* (Kamerstukken II, 1961-1962, nr. 6767): *NOTA DE POUS*.
- Ministerie van Economische Zaken (MEZ) (1995) *Derde Energienota 1996*, Kamerstukken II 1995-1996, 24 525, nrs. 1-2.
- Ministerie van Economische Zaken (MEZ) (1997) *Gasstromen: discussienota*, Den Haag: Ministerie van Economische Zaken, Directoraat-Generaal voor Energie.
- Ministerie van Economische Zaken (MEZ) (1999b) *Regels omtrent het transport en de levering van gas* (*Gaswet* Tweede Kamer Zitting 1999-2000, 26 463, nr. 7, 8.
- Ministerie van Economische Zaken (MEZ) (2001) *Brief aan de Voorzitter van de Tweede Kamer der Staten Generaal*, 19 November 2001, ME/EP/01059539.
- Ministerie van Economische Zaken (MEZ) (2002) *Brief aan de Voorzitter van de Tweede Kamer der Staten Generaal*, 8 April 2002, ME/EP/02018310
- Nelson, R.R., Winter, S.G. (1982) *An evolutionary theory of Economic Change*. Cambridge: The Belknap Press of Harvard University Press.
- Nelson, R.R., Sampat, B.N. (2001) Making sense of institutions as a factor shaping economic performance. *Journal of Economic Behaviour & Organization*, Vol. 44 (2001), pp. 31-54.
- North, D.C. (1990) *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
- North, D.C. (1994) Economic performance Through Time. *The American Economic Review*, Vol. 84, Issue 3, 359-368.
- Robinson, C. (2000) Energy economists and economic liberalism. *Energy Journal*, 21 (2), 1-22.
- Roggenkamp, M.M., Bos, J.A.M., (Eds.) (2001) *Energieliberalisatie in Nederland*, Intersentia Rechtswetenschappen, Antwerpen/Groningen.
- Shuttleworth, G. (2000) *Opening European Electricity and Gas Markets*. London: National Economic Research Associates, 15 November 2000.
- Brattle (2000), *Dte Implementation of the Gas Act*, London: The Brattle Group, Ltd., December 2000.
- Brattle (2002) *Access to Storage in The Netherlands* London: The Brattle Group, May 2002
- Brattle (2003) *Wholesale Gas Competition in the Netherlands and Implications for Phase III Customers*. (eds. Harris, D., Lapuerta, C), London: The Brattle Group, Ltd., June 2003.
- Weisman, D.L., Pfeifenberger, J.P. (2003) Efficiency as a discovery process: Why Enhanced Incentives Outperform Regulatory Mandates. *The Electricity Journal*, January/Februari 2003, pp. 55-62.