



COUNTRY STUDIES

Netherlands - Regulatory Reform in the Electricity Industry 1998

Introduction

The Review is one of a series of country reports carried out under the OECD's Regulatory Reform Programme, in response to the 1997 mandate by OECD Ministers. This report on regulatory reform in the electricity industry in Netherlands was principally prepared by Mr. Peter Fraser for the OECD.

Overview

Related Topics

BACKGROUND REPORT ON

REGULATORY REFORM IN THE ELECTRICITY INDUSTRY*

*This report was principally prepared by **Peter Fraser** of the International Energy Agency with the participation of **Sally Van Sijen**, Principal Administrator, of the OECD's Division for Competition Law and Policy, **Bernard J. Phillips**, Head of Division for the OECD's Division for Competition Law and Policy, and **Caroline Varley**, Head of Division, Office of Long Term Co-operation and Policy Analysis of the IEA. It has benefited from extensive comments provided by colleagues throughout the IEA and OECD Secretariats, by the Government of the Netherlands, and by Member countries as part of the peer review process. This report was peer reviewed in October 1998 by the Standing Group on Long Term Co-operation of the IEA and the Competition Law and Policy Committee of the OECD.

TABLE OF CONTENTS

1. CURRENT FEATURES OF THE ELECTRICITY SECTOR
 - 1.1. Key features
 - 1.2. Structural features (prior to 1998 Electricity Act)
 - 1.3. Policy drivers
 - 1.4. Regulatory framework
2. REFORM OF THE ELECTRICITY SECTOR
 - 2.1. Policy context
 - 2.2. New Policy objectives: The 1995 White Paper
 - 2.3. Policy Implementation: The 1998 Electricity Act
 - 2.4. The reform process
3. THE NEW MARKET STRUCTURE
 - 3.1. Generation
 - 3.2. Network access (transmission and distribution)
 - 3.3. The development of a wholesale electricity market
 - 3.4. Supply and end user choice
 - 3.5. Natural gas market
 - 3.6. Ownership and competitive neutrality
4. THE NEW REGULATORY FRAMEWORK
 - 4.1. Objectives
 - 4.2. Regulation for an effective market
 - 4.3. Environmental regulation
 - 4.4. Consumer protection
 - 4.5. Social and other public service regulation
 - 4.6. Transition: stranded costs
5. PERFORMANCE
 - 5.1. Costs and productivity
 - 5.2. Prices
 - 5.3. Reliability
 - 5.4. Environmental performance
6. CONCLUSIONS AND RECOMMENDATIONS
 - 6.1. Conclusions
 - 6.2. Recommendations

NOTES

BIBLIOGRAPHY

Tables

1. Shareholders of the production companies
2. 1997 Electricity Production for Dutch Market
3. Comparison of the Dutch Industry Structure and Regulation: Impact of 1998 Electricity Act
4. Status of transmission business in OECD jurisdictions with reformed electricity sectors
5. Phase-in of competition in supply in OECD countries

Figures

1. 1996 prices in OECD countries -- industry sector
2. 1996 prices in OECD countries -- Households

Executive Summary

Background Report on Regulatory Reform in the Electricity Industry

Although the electricity sector accounts for less than one per cent of employment and two per cent of Dutch GDP, the sector is strategically important as a key input to other sectors of the Dutch economy. Liberalising the electricity market could improve capital and labour productivity, reducing electricity prices and boosting output.

The current market liberalisation of the Dutch electricity sector is the result of three drivers: broader government efforts at regulatory reform, a desire to address problems with the current electricity regulatory framework, and a need to comply with the EU directive on electricity market liberalisation. The Dutch Government has passed a new electricity law that will liberalise the Dutch electricity market in stages between 1999 and 2007. A new network regulator is to be created that will work in close co-ordination with the new competition authority. New independent entities, the transmission and distribution network managers, are to be created to ensure non-discriminatory access to the networks.

Are the proposed reforms adequate to create effective markets for electricity in the Netherlands? The reforms offer good prospects for generation competition, effective regulatory co-ordination between sector and competition regulation, a sound stranded cost recovery plan, the development of a power exchange, and competitive neutrality. But in other areas the reforms need to be improved. Specifically:

- Delays in enacting the new law, and the details of the regulatory framework are worrying. The Dutch Government must ensure the new law and regulations are put in place as soon as possible.
- Continued common municipal/provincial ownership of competitive (generation/supply) and network (transmission/distribution) businesses provides scope for discrimination against new entrants. Greater efficiency and more competition could be achieved if generation and supply were separately owned and managed from transmission and distribution. The network regulator should apply the requirements for vertical separation stringently so that owners of network assets are encouraged to divest their other assets.
- Customer choice, which is fundamental to an effective market, is being introduced too slowly. The timetable should be advanced, and small customers should be able to take advantage of competition earlier through aggregation.
- The role of the Minister as a regulator in this new market is potentially too extensive and consideration should be given to delegating more duties to the new regulator and competition authority.
- The convergence between the gas and electricity sectors means that the role of Gasunie (a pipeline and supply monopoly which is 50% state-owned) as a potential competitor in the electricity sector could have a distorting effect on electricity competition. The natural gas sector should be restructured to the same extent and regulated in the same manner and by the same regulators as electricity.

1. CURRENT FEATURES OF THE ELECTRICITY SECTOR

1.1. Key features

The current Dutch electricity sector is distinguished by the influence of environmental and energy security policies on the type and composition of generating capacity, by its publicly owned monopolies, and by the previous efforts of the national government to increase economic efficiency by partially restructuring the industry and introducing limited competition in generation. More specifically, the sector is characterised by:

- A strong environmental policy influence:** The Dutch electricity sector is strongly influenced by the Dutch Government's policies to reduce carbon dioxide emissions (to stabilise emissions at 1990 levels by the year 2000) and improve the energy sustainability of the economy. This policy context, which includes subsidies and favourable gas prices, has encouraged large industries and the distributors to construct combined heat and power generation (CHP) capacity to compete with existing utility generation, CHP now produces 26% of electricity supplied for the Dutch market. This is one of the largest shares in the OECD. Government policy has included significant subsidies and programmes to boost energy efficiency and renewable energy by the utilities, the costs of which have been passed on to customers.
- Energy security concerns and a high reliance on natural gas:** About 60 per cent of Dutch power generation uses natural gas (the highest in IEA countries) a domestic fuel. The Dutch Government remains concerned by this level of dependence on a single source and has established policies to favour fuel diversification (in practice to favour electricity generation from renewable sources).
- Public ownership of electric utility monopolies through municipal/provincial governments:** The four “production”¹ companies responsible for central generation and high voltage transmission and the twenty three companies responsible for distribution and supply are monopolies ultimately owned by municipal and provincial governments. Continued public ownership of electricity supply has been supported by national policies such as the exemption of publicly-owned utilities from paying corporate taxes.
- A partially restructured industry to encourage economic efficiency:** The 1989 Electricity Act made several changes to improve the efficiency of the sector. It split generation and transmission from the downstream activities of distribution and supply. Economic efficiency was to be encouraged by introducing competition in generation, and particularly by encouraging distribution companies to enter generation as separate businesses to compete with the production companies. Large users (above 20 GWh) were permitted (at least in principle) to choose suppliers.
- A production cartel:** The 1989 Electricity Act also required the four production companies to work in co-ordination through SEP (the Dutch Electricity Generating Board) controlling all central generation, the high voltage network, system dispatch and imports and sales to the distributors at prices regulated by the Government. This was also intended to improve economic efficiency by allowing SEP to optimise use of central generating facilities.

–**Ownership links between production and distribution.** Two of the production companies are fully-owned by distributors (which are, in turn, owned by the municipal/provincial governments).

A more detailed description of the sector structure is dealt with in the next section, followed by a description of key policies affecting the sector, and the legal/regulatory framework.

1.2. Structural features (prior to 1998 Electricity Act)

Generation

The central generation sector consists of four regional generation and transmission public limited companies, generating 61 per cent of total electric power produced for the Dutch market. Each company is owned by a number of municipalities or provinces, either directly or through their distribution firms (Table 1). The four co-ordinate their activities through SEP (N.V. Samenwerkende elektriciteitsproductiebedrijven - Dutch Electricity Generating Board) a public limited company jointly owned by the four producers. SEP also acts as system operator, dispatching power and selling electricity to suppliers at an average cost price. SEP also owns the national grid and an integrated coal gasification combined cycle (IGCC) generating station - a relatively new “clean coal” technology - at Buggenum.

Table 1. Shareholders of the production companies

Production company (and description of region)	Shareholders
EPON - Northeast Netherlands	NUON, EDON (distributors owned in turn by provincial and municipal governments)
EPZ - South Netherlands	DELTA, PNEM, MEGA (distributors owned in turn by provincial and municipal governments)
UNA - Amsterdam, Utrecht, and Northwest Netherlands	Province of North Holland, Amsterdam City Council, Pegus (holding company for Utrecht province and city)
EZH - includes Rotterdam, The Hague	Province South Holland, city councils of Rotterdam, Dordrecht, the Hague, Delft, Leiden, ENECO (distributor)

Decentralised combined heat and power (CHP) generation accounted for about 26% of the power generated for Dutch consumption in 1997 - 20% produced by industry (oil refining, paper, chemicals, food and horticultural sectors are significant power producers) and the other 6% produced by the energy distribution companies.

Imports by SEP - mostly from France and Germany - account for the remaining 13% of power consumption. As SEP enjoys a statutory monopoly over imports, this means it controls 74 per cent of power supplied to the Dutch market. 1997 electricity production is summarised in Table 2 below.

Table 2. 1997 Electricity production for Dutch market

Producer	Capacity (MW)	Generation TWh (%)
EPON	4978	19.3 (20%)
EPZ	3858	14.7 (15%)
UNA	3472	12.3 (13%)
EZH	2282	11.2 (12%)
SEP	253	1.1 (1%)
Total central production		58.6 (61%)
Decentral/CHP	5280	24.6 (26%)
Imports		12.8 (13%)
Total	19870	96.1 (100%)

Source: EiN, (1997).

Fuel mix for domestic electricity generation shows a significant dependence on natural gas (about 60 % - the highest among IEA countries) - not surprising considering the availability of low cost natural gas in the Netherlands. Coal, purchased on the world market, accounts for 25%. Oil-fired generation, mainly by refineries using CHP, accounts for another 4%. There is a small nuclear programme (4% of supply in 1997). One small reactor, Dodewaard (55 MW), was closed in 1997. In 1994, the Government decided that the remaining reactor, Borssele (450 MW), is to be closed in 2004.

Transmission

SEP has a statutory monopoly over the operation of the high-voltage (380 kV/220 kV) system. SEP acts as system co-ordinator with a single control centre for the Netherlands, overseeing the economic dispatch of plant. There are currently no significant domestic transmission constraints.

There are good interconnections with neighbouring countries compared to OECD countries. Nameplate interconnection capability of the system is about 12 000 MW - equal to the peak demand of the system - but operational import limits are much lower than this - approximately 4 000 MW capacity or 40 per cent of consumption.

SEP also has statutory responsibility for transmission system expansion planning and managing expansion of the network.

Distribution and supply

Distribution and supply to 7 million electricity consumers occurs through 23 municipal or provincial authorities constituted as public limited companies operating under a monopoly concession. All distributors also distribute natural gas (although there are additional gas distributors that do not distribute electricity) and 11 have district heating systems as well.

Significant voluntary consolidation has been occurring, in order to improve efficiency of operations. Since 1985, the number of electricity distributors has dropped from 68 to 23.

Distribution (the low voltage physical transportation of electricity) and supply are currently bundled activities, *i.e.*, they are carried out by the same company, and suppliers independent of transportation did not exist. Recently very large users (greater than 20 GWh) have been able to take advantage of their liberalised situation and switch suppliers.

1.3. Policy drivers

A key policy driver is environmental policy. There is a commitment to control national emissions of carbon dioxide at 1990 levels by the year 2000. This commitment has resulted in a number of policies, programmes, and economic instruments aimed at improving energy efficiency, of which promotion of Combined Heat and Power (CHP) electricity generation was the most significant.

As part of the Dutch strategy, industry sectors including electricity production and distribution were encouraged to enter into covenants (see Chapter 2) with the government on improving energy efficiency. In 1991, the distribution utilities adopted an Environmental Action Plan as part of the national Environmental Action Plan (MAP 2000) (EnergieNed, 1997). Plan measures are aimed at increasing energy efficiency through demand side programmes, and through supply side measures (for which subsidies were available) in promoting CHP, landfill gas recovery, district heating and renewable energy. These measures are supposed to result in net savings of 17 million tonnes of CO₂ by the year 2000 (equivalent to about 10 per cent of Dutch national emissions). Direct costs of the environmental programmes of the distribution utilities are estimated to raise the domestic electricity bill by 0.8% (PiE, 1998d).

In addition to subsidies and voluntary agreements, the government has introduced the Regulatory Energy Tax (REB) (MEZ, 1997), which has raised electricity prices to households and small consumers by 15%. Renewable energy is exempt from the tax. As the tax is applied only to a small amount of energy used, the impact of the tax on large users is small (0.8%).²

Renewable energy is another major component of energy policy in the Netherlands. The Government has set a target of 10 per cent of primary energy supply from renewable resources by 2020 (MEZ, 1997). Additional measures include a number of different subsidies:

- Exemption of renewable energy sales from the REB.
- Tax relief for renewable energy projects.
- Green investment funds that are tax exempt for investments in renewable energy.
- Direct funding by the government (totally approximately 110 million Dfl in 1998).

As part of their environmental initiatives, utilities are also offering “green pricing” of renewable electricity to customers at a premium of 0.04 Dfl/kWh, about 15 % above the cost of regular supplies (PiE, 1997c). These premiums do not, in general, recover the entire additional cost of renewables, and the remainder is recovered from all customers through rates.

A second key, and linked, policy driver affecting the electricity sector is the Dutch Government’s concern over energy security and over-reliance on natural gas. Dutch Government energy policies have emphasised the importance of conserving domestic natural gas reserves (the only significant indigenous energy resource). They have also identified the risks to the Dutch economy of over-reliance on a single-fuel source and have used a variety of measures (*e.g.*, government ownership of production and transportation of gas, prices linked to oil product prices, and in the past, dedicated reserves for the Dutch market) to manage the use of this resource.

These energy security/fuel diversity concerns have had two practical impacts on the electricity sector:

- Policies to favour the efficient use of natural gas in power generation (particularly combined heat and power stations (CHP)) are a cornerstone of the 1989 Electricity Act.
- Policies to encourage fuel diversity in power generation particularly through increased use of renewable electricity generation have led to a number of subsidies and special programmes to develop renewable resources.

Last but certainly not least, a third policy driver which has been growing in importance is the objective of improving the sector's economic efficiency. As the section below explains, the 1989 Electricity Act was a first important attempt to rework the regulatory framework to encourage greater efficiency.

1.4. Regulatory framework

The 1989 Electricity Act is the cornerstone of the current framework and was implemented to promote a more efficient sector (as well as to promote CHP for environmental reasons). It requires the four regional production companies to work together through SEP in order to reduce costs through economies of scale. The Government (Ministry of Economic Affairs) regulates the prices the production companies are able to charge the distributors, as well as the retail tariffs charged to customers.

There is only limited freedom to contract in the Dutch electricity market. The 1989 Electricity Act allows an individual production company to sell directly to a distributor. In turn, a large user (> 20 GWh consumption) is able, in principle, to contract with different distribution companies other than its local company. In practice, however, very little energy is sold this way because of the very small price differences (the non-transparency of transmission rates (CPB, 1997) and a perception of high transaction costs are also factors). End user choice is, in practice, a limited feature of the current framework.

SEP has a statutory monopoly on imports and exports, although large users (but not distributors) could import electricity, with SEP acting as co-ordinator. In practice, little energy is imported this way, for similar reasons that large users have tended to stay with their local company (unknown transaction costs and a lack of transparency of transmission rates).

Entry since 1989 has been very different for central generation as opposed to decentralised generation. Entry to central power generation has been tightly controlled. Central power generation requires a license, which specifies a minimum size of 2 500 megawatts (MW). As this is larger than one of the four production companies, and far larger than the minimum efficient scale for power generation of a few hundred megawatts, this requirement has the effect of excluding new entrants. Individual central generation projects by the existing producers are subject to a planning process that requires parliamentary review. Ministerial approval is subject to further judicial reviews on such matters as environmental acceptability of the project (MEZ, 1996a). These regulations limit incentives to construct new central generation capacity.

By contrast, the 1989 Electricity Act strongly encourages market entry by decentralised combined heat and power (CHP) for environmental reasons. A variety of incentives - including investment subsidies until 1993 (up to 17.5% was provided by the government), an obligation to purchase the surplus generated from these facilities at estimated full cost of new central generation facilities (up until 1995), favourable natural gas prices provided by the 50 per cent state-owned gas supplier Gasunie, and an exemption (up until 1997) from paying for ancillary services (such as reserve capacity) have resulted in a doubling of the CHP contribution over 1990 (CPB, 1997).

Total domestic capacity in 1997 was nearly 20 000 MW on actual peak demand of less than 15 000 MW (including load displacement)- leaving a reserve margin of approximately 33% - far greater than necessary.

Renewable energy has benefited from even more favourable conditions, as discussed elsewhere.

2. REFORM OF THE ELECTRICITY SECTOR

2.1. *Policy context*

The previous section set out the historical and current context of the Netherlands electricity sector. The 1989 Act implemented some changes aimed at increasing efficiency. However, the Netherlands is now poised for further reforms aimed at stimulating even greater efficiency. The latest efforts at market liberalisation of the Dutch electricity sector are the result of three drivers: broader government efforts at regulatory reform, a desire to address problems with the current electricity regulatory framework, which has fallen short of the expectations of greater efficiency, and a need to comply with the EU directive on electricity market liberalisation.

The first driver is the broad national government programme for regulatory reform to improve the competitiveness of the Netherlands relatively small, open economy. Market liberalisation in the network industries such as electricity and telecommunications (Chapter 6) have been accompanied by an effort to reduce regulation by government (Chapter 2) and introduce a stricter competition regime (Chapter 3).

Second, it was clear that the electricity sector needed further reform. The 1989 Electricity Act had taken a step towards creating competition by partly restructuring the sector (into generation and transmission on the one hand, and distribution and supply on the other) and establishing favourable rules for combined heat and power (CHP) production. However, it had failed to create effective competition because the functions of generation and supply (both potentially competitive) were still tied in with transportation (a natural monopoly). It had also created further over-capacity problems by the way in which the CHP policies were implemented. Particular problems identified by the Netherlands are:

- Weak productive efficiency incentives:** Cost efficiency incentives for the production companies are weak. The four incumbents, through their cost pooling system which includes the costs of CHP, have extremely attenuated incentives for cost efficiency as they are able to pass through costs in prices. Thus, for example, the growth in CHP production ate away at the producers' market share, resulting in under-utilised capacity and higher unit production costs. These higher costs have been passed through to customers as higher prices.
- Distorted generation entry:** Too much CHP investment forced SEP to limit output from plants which were economic on a short-term marginal cost basis (*i.e.*, baseload plants). Prices, which would fall in a market to adjust for over-capacity, instead rose to recover higher unit costs for SEP. Higher SEP prices in turn encouraged the distributors to develop more CHP, leading to less SEP output and a vicious circle of inefficiency.
- Unwieldy central generation approvals process:** The central generation planning and approvals process for SEP required parliamentary and often judicial assent. This laborious process was inconsistent with the favourable approvals framework for CHP, and inconsistent

with dynamic decision making needed for the production companies to compete in opening European market.

The inadequate separation of functions - generation and supply from transportation (transmission and distribution) and the related lack of end user choice - should also be emphasised. The cross ownership links between production and distribution combined with continued public ownership through the municipal/provincial governments add to this problem.

Third, efforts to liberalise electricity markets throughout the European Union (EU) were advancing, leading to the Directive adopted in December 1996 (see box below).

Box 1. EU Directive on electricity liberalisation

The Council of the European Union adopted a directive on the internal market for electricity (EC, 96/92) on 19 December 1996 (EC, 1996). EU Member States must (with some limited exceptions) implement the directive into their national laws by 19 February 1999.

Under the directive, increasing shares of electricity markets must be opened to competition, based on size of user. For 1999, the group of largest users accounting for at least 26.48 per cent of the market must have a choice of supplier. This percentage increases to 28 per cent in 2000 and 35 per cent in 2003. In practice, the minima mean that only large users (average of 9 GWh annual consumption or greater - with a typical annual electricity bill of 500 000 euros or greater) would get the opportunity to choose suppliers (although Member States can or have gone further (*e.g.*, England and Wales, Sweden, Germany)).

Access to the grid is via a transmission services operator who must be separate (at least as a separate business unit) from generation and distribution businesses (distributors must have a distribution service operator who may be the same or not, as the transmission operator). EU Member States can choose from three different procedures for access. Under regulated third party access (as in England and Wales), the most liberal option, tariffs for third party access to the networks are regulated, published and are available to all parties. Under negotiated third party access (as in Germany), eligible consumers or generators/suppliers can negotiate network access with the incumbent utility. Prices and access terms are agreed freely among them and are confidential. The system operators must be involved in the negotiations and must publish an indicative range of transmission and distribution prices on an annual basis.

The third possible approach is the single buyer system, (so-called because a designated single buyer sells all electricity to final consumers) under which eligible consumers are free to conclude supply contracts with generators/suppliers both inside and outside the incumbent utility's territory. The single buyer purchases the electricity contracted by an eligible customer from a producer at a price which is equal to the sale price offered by the single buyer to eligible customers minus a tariff for network services.

There are two options for generating capacity additions. Under the tendering procedure, the monopoly utility determines when new capacity is required and conducts a tender for this requirement. Under the authorisation procedure, the timing of generating capacity investments is the responsibility of individual investors, provided that they meet criteria specified in advance by the Member State (*e.g.*, environment, land use, public safety) for grant of an authorisation to construct. Member States may also opt not to require a procedure and leave the addition to market forces.

The Directive contains significant provisions which may delay or affect the development of open markets. Member states may impose public service obligations to ensure “security, including security of supply, regularity, quality and price of supplies and ... environmental protection”. Furthermore, “to avoid imbalance in the opening of electricity markets” the directive permits the imposition of reciprocity requirements *i.e.*, a customer who has choice in one Member State may be prohibited from obtaining supply from a supplier in another Member State where customers of the same type do not have choice. The directive also permits Member States to impose a requirement that up to 15% of fuels to be used in the generation of electricity come from indigenous sources. A transitional regime for the recovery of stranded costs is also permitted, but must be approved by the Commission according to normal state aid rules.

Requirements for international trading or “wheeling” of electricity within the EU were originally set out in the Transit Directive (EC, 1990).

The Directive is to be reviewed with the intent of implementing further reforms 9 years after the original directive (*i.e.*, 19 December 2006). An implementation group has been set up by the European Commission to discuss how the directive will be implemented in Member States.

The EU has prepared a study that has examined the potential benefits of the liberalised market (EU, 1996). Cited benefits of increased international trade and competition include:

- Use of least cost plant across countries.
- Facilitation of trade with non-EU members.
- Reduced plant margin requirements (through interconnection and different peaking times).
- Optimal plant siting.
- More economic fuel choices.
- More efficient investment and operation of power plants.

Estimated savings are in the range of 10 billion ECU, which could mean wholesale price reductions across the EU of 5-11%.

2.2. *New policy objectives: the 1995 White Paper*

The new policy objectives for the sector were outlined in the government’s Third White Paper on Energy Policy published in December 1995 (MEZ, 1995, hereafter White Paper). With respect to the electricity sector, there were three major themes:

- a) Greater competition in the electricity sector is inevitable and desirable. The White Paper cites the International Energy Agency’s Shared Goals that the creation of a free energy market is one of the basic principles for energy policy - provided that neither security of supply nor the environment is jeopardised as a result. It argues that changes in the European marketplace, demands of customers, and the problems with the existing structure all drive the government to undertake liberalisation of electricity (and natural gas) markets. The White Paper also argues that increased competition will produce a better match between suppliers and the needs of customers, competitive prices, and improved efficiency.

- b) Sustainability and fuel diversification remain major objectives: The White Paper identifies long term policy objectives for the year 2020 to improve energy efficiency by one third and increase renewable energy supply from 1 per cent currently to 10 per cent by 2020. The government also expresses concern over the long-term vulnerability of the Netherlands economy because of its high reliance on natural gas - and identifies the promotion of renewable energy supplies as a means to diversify energy supply. With respect to electricity market liberalisation, the government acknowledges the need to ensure that environmental measures to ensure energy sustainability are consistent with liberalised markets.
- c) Managing the transition to ensure a robust Dutch electricity industry is important: The White Paper makes clear that reform must not disadvantage the Dutch electricity sector - at least at the start. It argues that “it is advisable that the Dutch electricity industry starts off well equipped.” The weak financial position of the Dutch production companies is highlighted and the paper argues that “large scale foreign utilities will be able to use their size and financial strength to seize parts of the Dutch market”. More positively, the Paper anticipates new opportunities in Europe particularly in the marketing of CHP expertise and technologies.

The White Paper makes clear the importance of competition and reconciling energy markets with energy sustainability. However, the goal of ensuring a robust Dutch electricity industry has, in practice, been translated into an objective of protecting the four incumbent production companies during the transition. This is important. While the development of a competitive Dutch electricity generation sector can be promoted by removing barriers to entry, protecting existing incumbents softens the impact of reform. It is very important that any measures to soften this transition for the incumbents not unduly hamper competition and not create uncertainty that would reduce efficient entry by new entrants. However, as shall be seen in the following sections, this concern over the incumbents has had adverse impacts on reform and is likely to have an adverse impact on future performance of the sector.

2.3. Policy implementation: the 1998 Electricity Act

Table 3 summarises the key features of the 1998 Electricity Act and contrasts them with the previous legislation.

Table 3. Comparison of the Dutch industry structure and regulation: impact of 1998 Electricity Act

Area	Old	New
Generation	<ul style="list-style-type: none"> a) Four generation/transmission (production) companies co-ordinated through SEP. CHP development by industries/ distributors. b) Parliamentary approval for new central generation. Few barriers for decentralised generation. c) Central generation operation and planning of four production companies co-ordinated by SEP. Imports by SEP. 	<ul style="list-style-type: none"> a) Four production companies to be separated. Numerous CHP plants in place as a result of 1989 Act. b) Free entry for all domestic production to contract with distributors and eligible customers. c) Reciprocity requirements on imports (see international trade).
Transmission	<ul style="list-style-type: none"> a) Transmission owned by the four production companies through ownership of SEP, who acts as system operator. b) Transmission expansion requires Parliamentary/judicial approval. c) Postage stamp pricing for transmission. d) Ancillary services pricing for decentralised generation. 	<ul style="list-style-type: none"> a) Transmission assets of SEP jointly operated by independent network manager. Dutch Government to hold 50% plus 1 of the shares. Oversight by independent governing board. b) Non-discriminatory terms of access to the grid (transmission and distribution tariffs) regulated by

		<p>network regulator and also approved by competition authority.</p> <p>c) Postage stamp pricing.</p> <p>d) Non-discriminatory ancillary services proposed.</p> <p>e) Transmission investment plans reviewed by network regulator.</p>
Distribution	<p>a) Distribution and supply bundled in 23 municipal/provincial public limited companies operating under monopoly concession.</p> <p>b) Significant investment by distributors in CHP generation.</p> <p>c) Number of distributors decreasing through mergers.</p> <p>d) Distributors able to contract with generators other than the four production companies, but so far little incentive to do so.</p>	<p>a) Distribution services under independent distribution services operator. Oversight by independent board.</p> <p>b) Merger activity continuing.</p> <p>c) Non-discriminatory terms of access to the grid (transmission and distribution tariffs) regulated by network regulator and also approved by competition authority.</p> <p>d) Distribution and supply operationally separated with independent boards.</p> <p>e) Distributors able to contract with other generators.</p>
Supply and end user choice	<p>a) Distributors are also suppliers. No independent suppliers. Large customers able to import but few have done so.</p> <p>b) Maximum customer tariffs approved by Ministry.</p>	<p>a) Customers able to contract freely according to size - large customers in 1999, medium 2002, small 2007.</p> <p>b) Distributors licensed to act as exclusive, regulated suppliers for captive customers.</p> <p>c) Prices for free customers unregulated.</p> <p>d) Prices for captive customers regulated by Minister under license.</p>
Regulator	Regulation carried out by Ministry of Economic Affairs.	<p>a) New sector regulator (DTE) and competition authority (NMa). (DTE is a chamber of NMa).</p> <p>b) Minister retains some regulatory responsibilities, notably setting tariffs for captive customers, imports, privatisation.</p>
International trade	Central producers have monopoly through SEP. Very large customers (not distributors) can arrange imports.	Central producers able to continue existing import contracts. Customers/licensed suppliers able to purchase imports if reciprocal access available.
Environment	Energy Efficiency programmes by distributors recovered through rates subsidies/green pricing of renewables.	<p>a) Continuation of existing programmes.</p> <p>b) New "green certificates" obligation on consumers to acquire renewable energy implemented through market mechanism.</p>
Taxes and subsidies	Utilities tax exempt, as publicly owned. CHP entry subsidised.	Tax exemption and explicit CHP subsidies removed.
Ownership	Municipal/provincial authorities own all central (and some CHP) generation, all transmission and distribution. Cross ownership links between production companies and distributors.	Unchanged. Law requires ministerial approval for privatisation prior to 2002.

2.4. *The Reform process*

The success of reform is dependent on the transparency of the process (and hence its public acceptance), its comprehensiveness, its speed, and the robustness of the institutional framework supporting reform.

The Dutch electricity reform process has been slow. Discussions on the current electricity reforms were initiated by the government in 1993. The Third White Paper, released in late 1995, outlined nearly all the key elements of the new Electricity Law. This was supported by policy analysis by the Netherlands Bureau for Economic Policy Analysis (CPB) (an independent economic research arm of the government) which laid out the possible economic benefits to be achieved by market liberalisation in the electricity sector. A formal proposal for consultation "Current Lines" was released in July 1996 (MEZ, 1996b). The Minister's response to comments was tabled in the Parliament in November 1996 (Wijers, 1996).

Presentation of original legislation to the Lower Chamber, together with a summary of the results of the consultation, was made in September 1997. Passage by the Lower Chamber did not take place until 24 March 1998, causing the date of introduction of competition to be delayed by a year until 1999. Passage by the Upper Chamber occurred 30 June 1998.

In addition to the main legislation, the Dutch Government has produced secondary legislation on electricity reform, the *Electriciteitsbesluit* 1998 (NSL, 1998). This legislation contains many of the details concerning regulation of the high and low voltage networks. While this secondary legislation would normally have been approved at the same time as the law, the Dutch Parliament has decided that the items proposed to be regulated in the secondary legislation had to be regulated in the Act itself. Passage is now hoped for by July 1999. This delay will not affect the main legislation directly, but will mean that important regulatory details (*e.g.*, a legally binding open access transmission tariff) will not be in place until after the market is launched in January 1999.

The time taken from initial proposals to first phase of market opening is just over 3 years, not the quickest by international standards (*e.g.*, the State of Queensland, Australia had a market operating 16 months after the release of its White Paper (QERU, 1998)), but has moved rather quickly compared the slow Dutch norm (see Chapter 2). Furthermore, the legislation has benefited from the time taken to consult - both in terms of the high level of knowledge and sophistication about the reforms among the key market participants - and the clarity of the legislation.

The legislation has avoided the trap of overspecificity, a drawback which could unduly handicap further reforms as the market develops (a particular concern considering the length of time needed to pass legislation). However, the flexibility that results is a two edged sword because administrative discretion creates uncertainty. Thus while the Minister would be able to accelerate the pace of reform (*e.g.*, to advance dates for customer choice) without further legislative changes, he could equally delay these dates. The decision by the government to delay passage of the secondary legislation will introduce some additional uncertainty.

As will be discussed later in the detail of the changes, the reform is not wholly comprehensive of the issues which need to be addressed (*e.g.*, effective separation of monopoly from competitive elements). In particular, there will be delay in opening up supply competition and in developing end user choice.

As regards the robustness of the new regulatory framework to promote competition, it is clearly a great step forward to establish a new competition authority and a new network regulator. However, the

Minister's continuing role as a direct regulator on key issues (such as imports) may become an issue. There is also a need to ensure that the electricity market regulation is well co-ordinated with environmental regulation (covered by a different Ministry) and with gas market reform.

3. THE NEW MARKET STRUCTURE

The establishment of effective competition depends on a number of linked actions:

- The removal of any formal barriers to generation entry, action to mitigate informal difficulties, and the creation of a sustainable critical mass of generators, particularly in the mid to peak load sector where the wholesale price of electricity is set. Special attention needs to be paid to the market power of incumbents (*e.g.*, by promoting divestiture of generating capacity and action on long term capacity contracts). General competition policy has a key role to play in sustaining effective competition. Stranded generating costs must be addressed so as to minimise any incentive for incumbents with stranded assets to distort the emerging competitive playing field.
- Non-discriminatory and efficient access to and use of the transmission (high voltage) and distribution (low voltage) networks. Incumbent utilities usually control both the networks and most generating capacity. They can thus easily discriminate in favour of themselves. Ownership separation of generation and supply from the transportation function is the cleanest solution to prevent discrimination - there remains neither incentive nor ability to discriminate. Less stringent separation such as functional unbundling (where grid operation is managed separately from operation of generating plants) or accounting separation (where company accounts are ring fenced) require heavy - and possibly ineffective - regulatory oversight. An effective governance structure for the transportation networks, and the non-discriminatory, effective management of ancillary services are also very important. Finally, efficient network pricing and regulated access to the networks are key.
- The development of an effective wholesale market. Open, transparent markets for trading electricity, combined with a legal framework which facilitates direct bilateral contracting between customers and suppliers, forges a critical link between generation competition, competition in supply and end user choice.
- Effective generation competition must be mirrored ideally in the simultaneous development of competition in supply to end users and full end user choice. Reform should encourage direct contractual relationships between generators, suppliers and even end users. Ideally also, distribution (the low voltage physical transportation of electricity) should be separated from supply, so that supply competition is encouraged, creating effective choice for end users, additional to direct access through the wholesale market to generators.
- The evolution and liberalisation of the natural gas market may be a very important issue for electricity market liberalisation. Natural gas can have an important impact on electricity liberalisation, both as an input fuel to electricity and as competitor in end use markets.
- Finally, ownership and competitive neutrality are important elements to address. Private ownership is the most effective spur to efficiency, and if a mix of ownership remains, it is important to establish a level regulatory playing field for all companies (public and private) operating in the same market.

These issues are considered in more detail below in relation to the Netherlands.

3.1. Generation

Domestic generation competition is encouraged by the reforms up to a point. The new law will remove current formal barriers to entry in generation, and the requirement on the part of central producers to receive ministerial approval before starting a new plant. Whilst there is no specific provision to restructure the market, SEP will disband, leaving control with the four regional production companies, none of whom has more than a 20% share of the market. Also, the success of the policy to encourage cogeneration has already produced substantial decentralised capacity - by 2000 up to 40 per cent of Dutch electricity production will be produced from decentralised generation. Despite significant over-capacity and revised pricing rules (which has made CHP development less favourable than before) new CHP projects continue to be announced and it is expected to be the predominant form of new entry into the generation market for the foreseeable future. (PiE, 1998c) Finally, there is substantial capability for importing electricity.

However, a new barrier to entry is being imposed on imported power. The extent to which customers can access imported sources is limited by the reciprocity requirements in the new Act. A customer who is eligible to choose suppliers is not permitted to import electricity from a country where he would not be eligible, without a dispensation from the Minister. For example, a Dutch customer in 2003 who consumes 100 kW (and therefore could choose among Dutch suppliers) would not be able to import power from a supplier in a neighbouring country if the laws of that country only permitted customers with demand above 1 MW to choose suppliers, unless the customer applied for and received dispensation from the Minister to do so.

The reciprocity provision, consistent with Article 19.5 of the EU Directive, is one of a number of measures in the legislation intended to protect the four Dutch generators against competing generators from other jurisdictions, particularly from jurisdictions with less open markets than the Dutch market. The Dutch market is interconnected with much larger electric utilities some of whom will be required to open their markets less quickly (in terms of size of customer).

An optimistic view of EU reciprocity provisions is that it could encourage a country with a less open market to liberalise further in order to gain access to a more liberal market. In North America, reciprocity requirements imposed by the US. Federal Electricity Regulator (FERC) (despite national treatment provisions in the North American Free Trade Agreement) have forced Canadian utilities to undertake limited market liberalisation in order to gain access to the U.S. market. However, a closer examination reveals that such utilities have liberalised only to the extent strictly required by the provision, and provided little scope for sales by U.S. utilities into these markets. It is far more likely that various reciprocity provisions, imposed and interpreted differently by different states of the EU, could significantly dampen international electricity trade, reducing many of the expected efficiency gains across the EU from market liberalisation.

In a quest for fairness, the Dutch/EU reciprocity provision comes at a significant price by limiting an important source of competition for existing generators. This will weaken the incentives on the big four production companies to improve their performance. Less international trade will also reduce scope for savings from more efficient use of plant across countries and potential for reduced plant margins.

The optimal approach to this difficult issue has to be tackled at EU-wide level and in the context of developing and refining a consensus among all EU countries on a level of market opening which is shared by all. The next best solution, for increasing competition and reducing prices to Dutch electricity customers, is to drop the reciprocity requirement. A third best would be for the Minister to grant dispensations and to set high standards for withholding a dispensation. Furthermore, independent (*i.e.*, non-incumbent) power producers from other jurisdictions should readily receive dispensation for operating in the Dutch market.

These considerations are also important given the large import capability of the grid which could increase the contribution of imports from the already substantial 13% of electricity produced for Dutch consumption up to approximately 40 per cent. SEP is planning to enlarge this capability through an undersea HVDC cable to Norway that is awaiting environmental approval (PiE, 1997*f*) - although this capacity will be used initially to fulfil a power contract between SEP and Statkraft.

There is no doubt about the potential for competition. There is a potentially very competitive generating sector (with access to low-cost natural gas and further CHP developments) that could attract investment in new generating facilities. The creation of a wholesale spot market, based on the Nordpool design, has the potential to provide a transparent pricing mechanism for electricity, encouraging trading of all types of capacity (baseload, mid-merit and peaking) through bilateral contracts. It also has the potential to stimulate an increase in the scope of the market beyond the Dutch national borders. The Dutch generating sector could become a highly successful competitor in international electricity trade and become net exporters, rather than importers, of electricity. Unfortunately, this potential is undermined by a number of government policies aimed at protecting existing incumbents. The reciprocity provisions discussed above will limit access of foreign producers to the Dutch market. Similarly, there is significant uncertainty currently over the government's policy to compensate the production companies for stranded costs (discussed below). This could have an adverse impact on new entry into the Dutch market.

3.2. Network access (*transmission and distribution*)

The aim of the new law is to ensure non-discriminatory access to the transmission and distribution grids through regulated third party access, the most liberal and transparent of the access procedures in the EU Directive. To achieve this, the generation and transmission activities of the production companies are to be operationally separated, and are put under control of an independent governing board, whose members must be approved by the Minister. Separation of the distribution network from the supply business of the distributors with an independent governing board is also mandated.

Furthermore, independent network managers are required for the national high voltage transmission network and for each distribution network. The network managers report to the independent governing board. Statutory duties of the network managers include:

- Operate and maintain the networks.
- Guarantee transport of electricity in a safe and reliable manner.
- Construct, repair and extend the networks.
- Publish plans regarding capacity needs for the networks.

- Maintain sufficient capacity.
- Offer connection and transportation (except where capacity is not available) and refrain from discrimination.
- Promote safe use of electricity.
- File open access tariffs.
- Maintain centralised system operation.

The network managers’ authority includes the ability to refuse to transport electricity on technical grounds. Furthermore, generators and suppliers cannot interfere with the performance of the network managers’ duties, giving the managers clear authority on the operation of the network.

While the degree of separation is consistent with the EU directive, the decision of the Dutch Government not to require full structural separation of generation from transmission (*i.e.*, for generation and transmission to be in separate companies) is at odds with some other OECD countries that have reformed their sectors. Many OECD countries that have opted to introduce competition in generation have also opted for a separate transmission company to operate the grid system (see Table 4) in order to ensure non-discrimination. However, the recent agreement between the government and the utilities to give the national government 50% plus one shares in the national high voltage grid in return for recovery stranded costs diminishes this concern.

Table 4. **Status of transmission business in OECD jurisdictions with reformed electricity sectors**

Separate transmission company required	Separate transmission company not required
Australia (most states), Finland, Hungary, New Zealand, Norway, Spain, Sweden, United Kingdom (England and Wales only)	Germany, Italy, United States

Source: Responses to OECD/IEA Electricity Indicators Questionnaire.

Nevertheless, it is not at all clear that the level of separation proposed in the Netherlands will be sufficient to ensure new entrants will have non-discriminatory access to the networks, particularly local distribution. Vertical integration of generation, distribution and supply has already started with the announcement that the distributor PNEM/Mega will reintegrate with EPZ, the generator of which it has majority ownership. A heavy burden will be placed on the new regulator to ensure that there is no cross subsidy between regulated and competitive businesses. Indeed, the government recognises that the degree of separation is not sufficient and has indicated that stronger separation measures may be implemented if discrimination proves to be a problem.

There is also the issue of what to do with the ownership of the national grid. Majority state ownership of the grid diminishes concerns about discrimination but raises concerns about the true independence of the grid regulator. An early privatisation of the grid would alleviate these concerns. The privatisation process should also provide incentives for the minority owners of the grid (the production companies) to tender their shares as well. In the United States, where private property rights make it impossible to impose divestiture, regulators in a number of states (California, Massachusetts, New Hampshire) have been able to persuade utilities to divest in order to remove this potential conflict. If it is considered undesirable or difficult to require outright separation, the U.S. experience suggests that it may be possible for a regulator to persuade utilities owning generation, transmission and distribution assets to

spin off their generating assets. A regulatory disincentive, *e.g.*, the threat of cumbersome regulatory oversight, may be helpful in encouraging this.

As noted above, the Netherlands has opted for postage-stamp pricing of transmission. New entrants will be obliged to pay for specific network expansions to connect them to the high voltage system (although not for consequent expansions in the main network). While postage-stamp pricing is in principle inefficient, the robustness of the existing high voltage system, the compact size of the country (and conversely, the potential for the market scope to increase far beyond Dutch national borders) suggests that a more complex approach to transmission pricing is not justified at this time. In future, as trading develops beyond Dutch borders into a regional market, the adoption of alternative approaches should be considered to deal with congestion.

Ancillary services are currently not separately priced. Proposals in the secondary legislation would improve efficiency, by ensuring that new entrants only pay for use of those services that they require (unlike the current system, where decentralised generation pays the same as centralised generation).

3.3. *The development of a wholesale electricity market*

Open transparent markets for trading electricity, combined with a legal framework which facilitates direct bilateral contracting between customers and suppliers, forges a critical link between generation competition, competition in supply and end user choice. An electricity market operator is needed to oversee the technical and economic operation of wholesale markets (and in particular, to oversee efficient behaviour by market participants) and, in some jurisdictions, plays an important role in system planning. Appropriate governance (and potentially, regulation) of the market operator are important to ensure non-discrimination among participants and efficiency.

As well as a spot market, parallel financial markets (such as forward markets and futures markets) can provide important hedging mechanisms, particularly for investors in power generation.

The Dutch electricity wholesale market is in the early stages of development. It will initially be a day-ahead market, based on the Scandinavian model (with some rule modifications to take account of the fact that Dutch generation is thermal rather than hydroelectric). Most trading is therefore expected to be through direct contracts between suppliers and customers, rather than through a centralised spot market (PiE, 1997*d*).

Plans are to introduce the day-ahead market when the market for large customers opens on 1 January 1999, with expansion to markets on the day, forward markets and futures exchanges as the market develops. As much of the electricity will be sold under contract in 1999-2000, the volume of electricity traded through the marketplace during this period will be a small proportion of the total electricity sales. The adoption of the successful Nordpool design to the Netherlands will likely facilitate the development of competition in generation and in supply for baseload, mid-merit and peaking generation.

A potentially important benefit of the creation of a wholesale market is to act as a catalyst for the Benelux region and beyond in regional trading in electricity. The Belgian utility Electrabel has signed up to participate in the Dutch exchange (EER, 1998). Regional wholesale markets encourage (indeed require) the development of compatible access rules and tariffs between countries. A planned interconnection between Norway and the Netherlands could also help encourage trading between Nordpool and the developing Netherlands wholesale market.

3.4. Supply and End User Choice

Empowering consumers through choice of supplier is at the heart of creating effective and efficient energy markets. It is not enough to focus on upstream generation and grid access. Vigorous competition will only come about if there is also - as early as possible in the reform process - vigorous competition in supply to end users, and end user choice.

The 1998 Electricity Law opts for a phased approach for electricity consumers to choose suppliers. The first phase, based on customers with demand at any one site exceeding 2 MW, will include 650 customers (33 per cent of electricity sales). The second group of 54 000, with a connection to the network exceeding 3 x 80 A (about 50 kW), will have access/choice as of 1 January 2002 and will add another 29 per cent of sales. The remaining 7 million small business and household customers (38 per cent of sales) will have access as of 1 January 2007. These dates can be advanced or postponed at the Minister's discretion. Aggregation will not be permitted.

Customers without choice are referred to as "protected" customers in the law and will be supplied exclusively by the supply business of their local distributor. Supply accounts must be maintained separately from distribution network accounts.

Competition in supply will be quite limited until the end of the year 2000 because of the four-year supply contract (the Protocol) between SEP and the distributors. This Protocol means that supply for the protected customers will be purchased in the same way as before. Furthermore, a significant number of the initial 650 customers are themselves power generators under contract to the distributors.

While the reform goes beyond the minimum prescribed in the EU Directive (and many EU states) - notably in identifying a date where choice is to be extended to all customers - the date for this is already delayed for eight years and perhaps longer should the Minister decide to postpone. This long delay in empowering consumers is not necessary on technical grounds and appears to be a reluctance to extend the full benefits of liberalisation to small customers. The Dutch Government's decision can be contrasted with Germany, Norway, Sweden, New Zealand and some U.S. states (*e.g.*, California, Massachusetts).

Table 5. Phase-in of competition in supply in OECD countries

No phase-in period	Jurisdictions requiring phase-in (and period)
Germany, New Zealand, Norway, Sweden, United States (some States)	Australia (3-6 years), United Kingdom (8 years)

Source: Responses to OECD/IEA Electricity Indicators Questionnaire.

Moreover, the longer the phase-in period, the more likely that problems can arise, particularly if customers with choice can enjoy the benefits of price reductions in the liberalised markets but protected customers do not enjoy such gains. This has been observed by a number of jurisdictions phasing in by customer size. Long phase-in periods also increase uncertainty during the transition, effectively reducing incentives for generation and supply market entry.

The adverse distributional effects of phasing in choice by customer size could be mitigated if customers were allowed to aggregate and purchase electricity co-operatively. Business organisations in the Netherlands which use multiple sites or co-operative organisations (such as the PBOs - see Chapter 3) would welcome the opportunity to access cheaper sources of supply as would smaller businesses.

3.5. *Natural gas market*

Natural gas can have an important impact on electricity liberalisation both as an input fuel in electricity and as competitor in end-use markets. Natural gas and electric utilities/marketers, in turn, can be competitors in retailing “energy” rather than gas or electricity, suggesting opportunities for convergence between the two markets.

Netherlands energy policy places significant importance on the conservation of natural gas reserves, as natural gas is the only significant indigenous primary energy resource. The government will be liberalising their natural gas market to comply with the EU gas Directive. Market opening is expected to proceed on the same schedule as electricity for intermediate and small customers. The EU Directive specifies that all electricity producers will be able to choose their gas supplier as part of the first tranche of market opening - this will present natural gas-fired generation with an opportunity to further reduce costs.

However, the convergence between gas and electricity markets means that distortions in the structure and regulation of the natural gas market could lead to distortions in the electricity market. This is particularly important in the Dutch case because the electricity sector is very reliant on natural gas, the Dutch Government concerns with respect to natural gas security of supply, and the continuing involvement of the Dutch Government in the development and supply of natural gas through Gasunie.

The Government has historically relied on the 50 per cent state-owned natural gas company Gasunie³ to ensure security of supply and to set prices. Currently, despite theoretical third party access provisions which would allow small fields to sell gas directly, (and since 1996, large consumers to buy gas) Gasunie, thanks to its effective monopoly transportation powers can buy gas at more attractive price than big industrial users could offer, and resells it to distributors acting as exclusive suppliers to end customers.

The Government’s policy on natural gas liberalisation implies a continuing role for the government in ensuring adequate reserves of natural gas for domestic consumption. Gasunie will remain in place, but will offer access to its pipeline system on a negotiated (rather than regulated as in the electricity market) third party access system. The competition authority would have the responsibility of policing anticompetitive behaviour (such as abuses of dominance) by Gasunie but unlike electricity, there is no corresponding network regulator.

Gasunie is already a key supplier to the electricity producers - selling over 2 billion Dutch guilders (8.84 Mtoe at an average price of 252 Dfl./toe - IEA, 1998) worth of natural gas for electricity production (which in turn accounts for 60 per cent of all electricity supply). This compares to a price for large industry of 259 Dfl/toe and household prices (before tax) of 524 Dfl/toe.

Gasunie’s position and less stringent requirements on unbundling and pipe access could give it an advantage if it chooses to enter the electricity market as either marketer (of both gas and electricity) or as power producer. In other words, in the electricity market, Gasunie would be the dominant supplier of natural gas to power producers, could compete with those producers in supplying electricity through its own production, and compete with electricity marketers by marketing natural gas and electricity jointly. Competing marketers would be concerned whether Gasunie, through its non-transparent negotiated access provisions, might offer favourable transportation rates to its own marketing arm. Furthermore, as dominant supplier, it may be able to price discriminate between the more hotly contested large industrial market and the small customer market. Its competitors in the electricity generation business would be concerned about the prices they were being charged for natural gas and/or natural gas transportation compared to prices charged to Gasunie-owned generation (should it acquire any). While the competition authority has the

responsibility to police Gasunie's transportation operations to ensure non-discrimination, there is a concern about the difficulty of successful enforcement if Gasunie is not restructured.

Similar concerns in the U.K. market with the introduction of competition led to a decision to separate the gas transportation and storage businesses of British Gas (now Transco) from that of natural gas production and marketing (now Centrica) (IEA, 1998a). To prevent Gasunie from abusing its position, it should be vertically disaggregated (ideally this should involve complete structural separation of transport from production, as in the UK), and third party access to transport should be regulated as in the case for electricity.

3.6. Ownership and competitive neutrality

Public ownership in the electricity sector is a major impediment to effective reform over the long run. Not only do the rigours of competition on a private company act as the most effective spur to efficiency, but it also forces companies to review their financing structure and publish company accounts that give shareholders clearer information about the company's profitability, financial structure (debt to equity ratio), return on capital, etc. It also ensures competitive neutrality within the market place with other private sector companies. Any continued public ownership in the sector, particularly in generation and supply, must be on the basis of competitive neutrality with private sector entrants. Publicly-owned utilities should therefore pay taxes at the same rate, have equivalent cost of capital and dividend policies, and generally be subject to an equivalent regulatory framework as private companies.

The Dutch public electricity sector is characterised by relatively high profitability relative to other electric utilities in other OECD countries, with significant dividends to shareholders (*i.e.*, the municipal/provincial councils) (OECD, 1997). However, these high dividends have been at the expense of improving the financial structure: typical debt to equity ratios are in the 80:20 range which could not be sustained by a privately owned company trading in the market. Such high ratios are indicative of the shareholders' confidence that the production companies would not be permitted to fail. Indeed, the government's action to encourage a merger of the companies is evidence that justifies shareholders' views. As a result, the production companies likely enjoy a lower cost of capital than a comparable privately-owned firm.

While such high ratios may be common in publicly-owned utilities, they are not in a competitive market. The production companies will require an equity infusion to reduce their debt loads, either from their existing shareholders or from a private sector partner, to be competitive in the new market. Such an infusion would also improve competitive neutrality.

The success of these companies depend on the sound business judgement of their management. Although they remain publicly owned, the boards of directors must be selected on the basis of business skills relevant to the new competitive market. Furthermore, these boards need to ensure their managements have proper incentives to maximise profits, minimise costs and to operate under hard budget constraints just as private sector firms.

As noted above however, better performance from management may be best achieved if shareholders considered privatising their assets. Unfortunately, the new law requires that ministerial approval be obtained for the sale either of electricity production assets or the networks until the end of 2002 (the Minister can also opt to extend this requirement for the networks or suppliers until the end of 2006). This is bound to reduce the pressure on management to improve their efficiency.

Traditionally, neither the production companies nor the distribution businesses were required to pay corporate income tax as publicly owned companies. The Electricity Law provides for corporate taxes to be phased in gradually, over a ten-year period. This will be a significant positive step forward in establishing competitive neutrality. However, there could be a disincentive to privatisation because the privatised entity would become subject to full corporate taxes.

4. THE NEW REGULATORY FRAMEWORK

4.1. Objectives

The regulatory framework for a new competitive market structure needs to fulfil a number of functions. Not only must it provide for the effective development of a competitive market, but it must also find the most efficient way of integrating other objectives, notably environmental, safety, social and consumer protection objectives. The framework must also support the long term security and reliability of supply for electricity and deal with converging interests between electricity and gas regulation and electricity and competition regulation.

First, however, effective regulation of the new market structure (combined with robust regulatory institutions) is essential to ensure the development of competitive and efficient markets. Regulatory oversight is necessary in transportation, to ensure non-discriminatory tariffs and terms of access to the grid by all generators, suppliers and customers with choice. Effective transmission pricing is important in providing price signals to system users and encouraging appropriate and timely investment. In the Dutch case, regulatory oversight is also important to prevent cross-subsidisation between transportation and the competitive businesses of generation and supply.

The General Competition Law should be applied to the electricity sector except for those aspects which are covered by rules specific to the power sector.

The new Netherlands regulatory framework will be assessed in terms of its potential to underpin effective competition, followed by other key objectives such as the environment.

4.2. Regulation for an effective market

Electricity regulation will be carried out by three entities, a new network regulator (DTE), the (also new) competition authority (NMa), and the Minister directly.

Network regulator (DTE)

DTE will be a chamber of the Dutch Competition Authority, currently a supervisory department of the Ministry of Economic Affairs (although it is expected to become an independent administrative body in few years). It will regulate the transmission and distribution grids, including grid access prices and other terms of access, and will review plans for network expansion. However, as the market will commence operation before the secondary legislation is passed which sets out how DTE is to set prices and access terms and conditions, access prices and terms and conditions will be negotiated rather than regulated. The secondary legislation specifies that network tariffs are to be set according to a multi-year price cap (similar to the U.K.) (ESB, 1998).

Early challenges for the new regulator include:

- Cost allocation - to avoid cross subsidy between (monopoly) grid activities and the competitive activities of generation and supply.
- Transmission pricing and availability, particularly interconnections for imported electricity (as operational capability is far below technical capacity) - important in encouraging imports from other jurisdictions as an early source of competition.
- Pricing of ancillary services (including, notably, back up), particularly for CHP and for renewables - critical in ensuring effective entry over the medium term.

Good co-ordination is planned (and needed) between the network regulator and the new competition authority. DTE must have the agreement of NMa with respect to tariffs and rules for grid users. Furthermore, while DTE is part of the Ministry, it is expected that DTE staff will be physically located as a chamber within the NMa (Wijers, 1998).

Competition authority (NMa)

NMa, as well as general responsibilities to police anti-competitive behaviour by electricity market participants, has specific regulatory responsibilities identified by the new law. The general responsibilities of NMa include responsibilities to police mergers, horizontal and vertical agreements. All elements are relevant to the Dutch electricity sector - the proposed merger of the four production companies, the existing horizontal arrangements between the production companies, and the vertical arrangements between the production companies and the distributors. The specific responsibilities include:

- To review and reach agreement with the network regulator, DTE, on grid tariffs and access rules, from the competition point of view.
- Dispute resolution over grid access terms.

Proposed merger of the generators: The first case NMa decided to examine upon its creation in January 1998 was the proposed merger of the four production companies managed by SEP into a single new company "GPB". The merger was promoted by the Dutch Government as a necessary step to give the Dutch electricity generation sector the necessary size to cope with the opening of the European market. In effect, the Dutch Government is arguing that in a European electricity market, only the merged company would have the necessary economies of scale to compete. The Dutch Government (as noted earlier) appears potentially more concerned with national competitiveness, than with stimulating effective competition, at least in the early stages of reform.

NMa's initial examination concluded that the merger had significant potential for limiting competition in the new electricity market for the following reasons:

- The new company would generate the majority share of Dutch electricity.
- Over-capacity meant it was unlikely that much new generation would come on line in the Netherlands over the next few years.

–About 1 500 MW of the 4 000 MW import capacity would be controlled by the new single producer through existing contracts with foreign producers.

NMa's initial ruling would have meant the need to undertake more detailed investigation of the competition impacts of the merger. The second stage would have included an investigation of the claim that the benefits of economies of scale created by the merger would outweigh any adverse effects on competition. Even if NMa had ruled against the merger, the Government has authority to overrule NMa, and may well have done considering its policy position. However, shareholders of the four production companies subsequently decided not to proceed with the merger, reportedly because of a failure to reach agreement over governance and financial issues (PiE, 1998b).

There will certainly be significant competition benefits from four, rather than one, central producer because of the competitive pressures on electricity generation. Further, the collapse of the merger does not rule out new combinations of domestic and foreign producers that may, in the long run, enhance the value of Dutch electricity generating assets even more than the Dutch Government's proposal would have done.

Horizontal agreements: The 1989 Electricity Law required the four production companies to co-operate with one another through SEP (in effect, to act as a central generation pool). This co-operation included sharing information and common procurement of equipment and fuel. SEP was also responsible for existing import power purchase contracts and investments in coal gasification and renewable energy.

The decision not to proceed with the merger implies that these arrangements must be unwound, because they probably violate the Competition Law. The years of experience of the four production companies co-operating with one another may lead to some difficulties in changing their culture to one in which they must compete with one another. NMa will have an interest in examining any residual joint arrangements to ensure that the four companies have made this cultural shift to compete, and not to discriminate against new entrants.

Vertical agreements: Given the common ownership of generation, transmission and distribution, vertical agreements in the liberalised market will need to be carefully monitored. The competition implications of the recent agreement between EPZ and the large distributor PNEM/Mega (its majority shareholder), to reintegrate is a particular challenge. Also, the power supply agreement between SEP and the distributors, which runs to the end of the year 2000, will require exemption under the Competition Law. While the competition impact of this agreement is time limited, there is pressure to extend it. In fact, the Minister of Economic Affairs had argued that extension would aid the companies in the transition to competitive markets:

The gradualness with which the market is opened will give players (i.e., generators and distributors) an opportunity, even after the expiry of the contract period (i.e., end of 2000), to accomplish the transition to a totally free market by concluding long-term contracts. (Wijers, 1996).

The ability of the competition authority to review these contracts is limited by the Minister's role in directly regulating the distributors' supply arrangements on behalf of protected customers, which is exempt from application of the Competition Law's prohibitions for a period of five years (NCA, 1998, (Articles 16, 107)).

Minister of Economic Affairs

In addition to the role of DTE (the network regulator) and NMa (the competition authority), the Minister of Economic Affairs will continue to play a significant direct and indirect role in regulating the electricity sector.

The Minister's most important direct roles will be to regulate prices for the protected customers (*i.e.*, those with no choice of supplier), and to set out the terms and conditions of supply to these customers through a licensing process. Prices for supply are to be set through a multi-year price cap formula. As the Minister must "consider purposeful management by license holders in the purchase of electricity or fuels", this implies that anticipated changes in market prices could be reflected indirectly through the productivity factor. The Minister may also grant dispensations on a number of issues, most importantly on permitting imports by a customer from a country where a customer would not have a corresponding ability to choose a supplier (the reciprocity issue). Ministerial approval is also required over the privatisation of production or network assets up to the end of 2002, with the possibility of extending this requirement for the networks for four years.

The Minister also has significant indirect influence over the sector. With respect to DTE, the Minister can establish:

- Policy rules with respect to the exercise of DTE's authority.
- Network pricing policy (*e.g.*, "postage-stamp" pricing of transmission) and how investments in networks may be recovered through prices.
- Transmission planning requirements.

A fully independent regulator might have been more seriously considered. The Government's reluctance to introduce a fully independent regulator is, however, based on a bad experience with an independent regulator in the social security field (its financial mismanagement was blamed on the governing party costing it substantial support at the following election). The current arrangement leaves ultimate political accountability with the Minister. But the decision not to set up a fully independent regulator could have significant consequences. Given the Government's concern over the financial health of the incumbent companies, the Minister could use his/her regulatory powers to restrict imports (by use of the reciprocity article), and allow above market production costs to be passed through to customers (through the selection of the efficiency factor "X" in the price cap), to protect these incumbents. Once stranded cost recovery rules are in place and the incumbents are on a sounder financial footing, the establishment of a fully independent regulator should be reconsidered.

In any event, the Minister will face some difficult decisions as electricity regulator:

- Regulation of retail prices for protected customers:** Setting the "X" factor in the price cap will be difficult, given that it is a multiyear cap but may not correspond to the most economic purchasing arrangement (which may be to rely on a portfolio of contracts of different durations). The reintegration of distributors with producers will make it more difficult for the Minister to determine whether supply agreements are truly economical.
- Import regulation:** Rules governing the approval of imports from non-reciprocal jurisdictions will be a difficult challenge. How will the Minister regulate imports considering the number

of times these could change hands? How will the arrangements work (as they need to) in the context of the wider role of the EU competition authorities and EU law?

–**Privatisation:** The requirement for Ministerial approval of asset sales up to 2002 appears to have been included because of the view that privatisation should only take place in a fully competitive market, not before. However, privatisation of generation assets could have clear financial and competition benefits for the sector. Private equity investment could be a solution to the high debt loads of the production companies. Outright privatisation could benefit competition by removing the common ownership interests between generators and distributor/suppliers, eliminating a source of potential cross-subsidisation, quantifying any stranded costs from generation investments and increasing competitors. Thus the Government should be encouraging privatisation, rather than putting in measures to limit it.

4.3. Environmental regulation

The new Electricity Law effectively obliges much of the utility-committed activity in energy efficiency and renewable energy to continue. Measures include:

- Producers and suppliers are obliged to implement energy efficiency measures and are able to recover these costs through a levy on the networks (although this apparently will not be implemented).
- Suppliers are obliged to purchase small CHP, hydro, biomass under 2 MW and wind or solar under 8 MW until 2001 (or 600 kW until 31 December 2006) with payments to be set by the Minister.

The legislation also permits the Minister to impose a “green certificates” system to stimulate the production of renewable energy. Under this system, renewable energy producers are issued with certificates corresponding to their total contribution of renewable electricity to the Dutch market. The Minister creates a demand for these certificates by requiring all consumers to have the appropriate portion of certificates for their use (say 5 per cent of all electricity purchased). Electricity users (or their suppliers) may buy the certificates from the producers directly or purchase them through a market for the certificates (much as tradable emissions permits are traded). The trading price for the certificates should represent the marginal premium for renewable energy - providing a transparent price signal for potential entrants in the renewable energy market.

The green certificates proposal is commendable for its use of a market mechanism. By making the certificates tradable, it is possible to obtain a market price for the premium paid for green energy and put cost pressures on renewables producers.

However, it is a mandatory instrument that will create a separate “green” market, rather than an approach that seeks to integrate “green” with other electricity in one market. As with any market, green certificate prices could be very volatile, particularly if the Minister’s target is set too high.⁴ Verification of green production, particularly for foreign producers, will be an additional problem.

Renewable energy costs can be significantly affected by the electricity market rules. The secondary legislation is planned to ensure that the design of the market access rules, the pricing of ancillary services for intermittent sources of supply such as wind and solar energy, avoid unnecessary barriers or unjustified costs for smaller renewable sources.

Emissions regulation and policy will continue to be developed by the Ministry of Housing, Spatial Planning, and the Environment. Given the significant impacts of environmental regulation on the electricity sector, continuing close co-ordination between this Ministry and the Ministry of Economic Affairs will be needed.

4.4. *Consumer protection*

The Netherlands has a well-developed consumer protection system for small electricity consumers, not least because of a very well organised consumers association, the Consumentenbond. The *Stichting Geschillencommissies voor Consumenten Zaken* acts as a consumer complaints board, to deal with disputes between electricity distributors and small customers (CI, 1995). Mainly government funded initially, these boards are increasingly funded by the utilities.

In addition, the 1996 Energy Distribution Act (Wijers, 1996) requires the distributors to set up consumer councils which develop policies with respect to connection/disconnection, collection of unpaid bills, environmental policy, and information to be included in mailings to customers. The Consumentenbond and EnergieNed, the distributors association, have reached an agreement on a code of conduct which covers all areas including liability for power outages.

Both functions are to continue in the new marketplace. There is an opportunity to use these councils to assist in designing a market that will empower small consumers.

4.5. *Social and other public service regulation*

Electric utilities are often given additional service responsibilities that might not be voluntarily undertaken by competitive firms operating in a free market. These include local equality of tariffs (no cherry picking of good over bad customers) and universal local service. It could further include discounted electricity rates to certain groups, and service provision to rural or remote communities at prices below costs. The transition to markets must consider whether such obligations are still needed and, if they are to continue, their costs need to be made transparent and shared by all market participants. Subsidies should, to the extent possible, be applied through general funding, *e.g.*, lower or negative income tax rates, rather than by distorting market prices. If subsidies are applied directly to electricity, then they should apply to fixed costs and not to variable costs in order to minimise price distortions.

However, social obligations and subsidies do not appear to be an issue in the Netherlands. There appear to be no explicit subsidies to particular groups of users that need to be addressed in the Dutch reform.

4.6. *Transition: stranded costs*

The effective handling of transition - in particular stranded costs from an earlier regulatory regime - is fundamental to the success of market reform in order to ensure a level playing field for new entrants. Given the Dutch's Government's concern over the financial health of the four production companies, one might expect an extensive stranded cost recovery framework. In fact, the stranded cost framework relied on the now-defunct merger of the production companies, leaving only limited provisions for stranded cost recovery in the legislation.

On the positive side, much of the central generation is by natural gas (which is locally abundant and generally sold through four year contracts) and coal (which is imported, and purchased competitively). Older assets have generally been upgraded both with respect to efficiency and emissions control; there is also significant investment by the producers in combined cycle gas-fired generation.

That said, four factors suggested difficulties ahead:

- A significant fall in electricity prices because of the move from monopoly to markets at the Dutch and European level, combined with substantial over-capacity in the European markets, creating downward pressure on prices.
- Past “public policy” investments that are now uncompetitive. This includes investments in district heating schemes and the coal gasification plant at Buggenum. These investments, amounting to 2 billion Dfl (according to government estimates, PiE, 1998*a*) are uneconomic at current electricity prices, driven down by over-capacity and market reform.
- Contractual arrangements between distributors and industry on joint venture CHP investments. These joint venture projects often specify an electricity price for a 10-15 year period (this was necessary in order to procure favourable financing) at prices that may prove to be well above market prices. Similarly, some long-term fuel and power purchase contracts have been identified as potential stranded costs.
- The weak financial position of the production companies, with debt ratios in the 75-80 % range. The companies risk insolvency if prices fall in the market because of a lack of equity, since existing equity will be wiped out by the necessary write-off on the book value of the asset.

Two stranded cost recovery measures were established in the law:

- The four year supply agreement (until 31 December 2000) between SEP and the distributors requires the distributors to buy energy from the production companies at current prices.
- Stranded cost recovery mechanisms are specified in the new legislation. Until 31 December 2000, the production companies would be eligible for stranded cost recovery through a transmission levy. Furthermore, stranded costs from district heating schemes can be recovered through a transmission levy up until 2022.

In addition, the Netherlands Government has reached an agreement with the companies on dealing with stranded costs. The main points of the agreement are:

- Stranded costs from investment in the coal gasification plant at Buggenum and specified urban heating projects will be recovered through the transport levies mentioned above.
- The Netherlands Government will take responsibility for any stranded costs arising as a result of long-term power contracts entered into by SEP.
- In return, the Netherlands Government will receive 50 per cent plus 1 share of the national high voltage grid assets of SEP.

–Furthermore, there will be no government support for stranded costs resulting from devaluation of normal production assets if the liberalisation process leads to substantially lower prices.

This agreement, which will require approval of the Dutch Parliament, is a very positive development for the Dutch electricity reform. It clarifies precisely what stranded costs will be recoverable and how they will be recovered from customers. By acquiring a 50 per cent share of the high voltage system, the government is enhancing separation between generation and transmission, further decreasing the likelihood of discrimination. By excluding the fall in value of assets as a consequence of liberalisation, it sets a very high standard of what costs ought to be recoverable and thus will encourage financial restructuring (and possibly privatisation) of the production companies.

However, some distributors are very concerned that there are no stranded cost recovery provisions for their CHP ventures and they may seek to recover any excess costs through prices charged to the captive customers. The Minister, as regulator, will need to guard against attempts by the utilities to recover these costs through supply charges on captive customers.

5. PERFORMANCE

As the Netherlands is just beginning its market liberalisation, the performance measures below must be seen as benchmarks against which future performance can be measured. At this stage in international market reform of electricity, there is also little data for international comparison. It is not therefore clear how the Netherlands compares with others. Some studies have been carried out to estimate potential gains, as discussed in Box 2.

5.1. *Costs and productivity*

Labour productivity: The Netherlands reports a significant improvement in productivity from the public supply system (SEP plus the 23 distributors) from 3.0 GWh per employee in 1994 to approximately 4.2 GWh per employee in 1997 because of downsizing in both generation and network businesses. The management of the production companies had developed a plan to improve efficiency as a single production company, suggesting that staff could be reduced by a further 25% (from 5 300 to 3 800)(PiE, 1997a). While some of these savings were likely only achievable through the merger, the pressure to find savings of similar scope will continue once the competitive market is launched. This suggests that the OECD analysis (see Box 2) which forecasts an improvement in labour productivity under liberalisation from 3.0 to 4.5 GWh per employee may be an underestimate. The Dutch Bureau of Economic Policy Analysis (CPB) has initiated research in this area (Dykstra, 1997). Hopefully, this will also shed light on the type of activities that are expected to yield most efficiency gains (and whether some of the efficiency gains are due to outsourcing).

Fuel conversion efficiency: Efficiency of fossil fuel conversion to electricity in electricity production facilities is relatively high in the Netherlands at 44 per cent (fossil fuel only). This high percentage is due to the large proportion of CHP as well as recent investments by SEP to upgrade efficiency at existing plant and to build a new combined cycle station at Eemshaven.

Investment efficiency: There is continuing over-capacity in the Dutch generating sectors because of continuing investment in CHP. Total capacity in 1997 was nearly 20 000 MW with a peak demand of less than 15 000 MW (including load displacement)- leaving a reserve margin of approximately

33% - far greater than necessary. This also does not include the impact of imported electricity - about 1 500 MW is currently under contract to SEP- which takes the excess even higher.

The key for improved investment productivity will be realised through plans to close down older and less efficient power plants (a practice that will be strongly encouraged by market pricing) as well as finding new markets in which to sell electricity, a task made more difficult by current European over-capacity. Nevertheless, provided the EU Directive is successful in providing new opportunities for Dutch generators to sell electricity, Dutch generators could reduce reliance on imports and might even aim, over the medium term, to become exporters of electricity.

5.2. *Prices*

IEA data rank Netherlands electricity prices for both industrial and household consumers in the middle of the pack among IEA countries (see Figure 1, IEA 1998). It should be noted, however, that international price comparisons may be misleading, as we may not be comparing “like with like”. For example, some countries’ electricity prices may be distorted by subsidies and cross subsidies between consumer groups. Also, the financial position of companies across countries is not easily comparable and may lead to price differences that are unrelated to real efficiency and costs.

5.3. *Reliability*

Like the rest of Western Europe, reliability of electricity supply is very high (26 annual minutes of unavailability per customer per year).

5.4. *Environmental performance*

Emissions of sulphur and nitrogen oxides from the central generator SEP have fallen principally as a consequence of emissions control equipment (flue gas desulphurisation, selective catalytic reduction) added to coal-fired generation, installed as result of a covenant between the producers and the national and provincial governments covering the period 1990-2000 (UNI, 1997). Since 1990, total emissions of sulphur oxides have fallen 66 per cent and NOx have fallen from approximately 33 per cent. Emissions intensity has declined to 0.18 g/kWh and 0.6 g/kWh in 1996 (a very low figure for an OECD country relying so heavily on fossil fuels for power generation). Carbon dioxide emissions from electricity production have increased 8 per cent since 1990 - owing in large part to a rise in production of 20 per cent. Carbon dioxide emissions intensity has fallen to 0.5 g/kWh. as the increase in production is largely CHP and combined cycle gas power generation. The Netherlands Kyoto target (a 6 per cent reduction of greenhouse gas emissions from 1990 levels over the period 2008-2012) will be difficult to achieve. On the positive side, however, over-capacity, low demand growth and new renewable energy coming on stream could help the process.

Box 2. Forecast benefits of electricity market liberalisation

A study commissioned by the OECD (OECD, 1997) noted that labour productivity in the Netherlands was low, lagging well behind the US. Significant surplus capacity (although common among utilities) also implied that capital productivity was suboptimal. The study cites other work that suggests public utility worker pay was higher than workers in comparable industries.

The analysis develops a base scenario on the impact of market liberalisation: a 50 % improvement in labour productivity, a 5 % reduction in wages and profits, a 25% cut in capital costs and a 5 % boost in output from increased innovation. The analysis predicts an 11% reduction in prices and a 5.7% boost in output. Given the total turnover for the sector of about 12 billion DFI, an 11% price reduction represents reduction in costs for consumers of 1.3 billion guilders per annum. There is, however, a 25% employment loss in the sector from the efficiency improvements.

6. CONCLUSIONS AND RECOMMENDATIONS

This review of the Netherlands electricity reform is prospective, as the reforms are just being put into place and many of the detailed rules have yet to be finalised. This chapter therefore focuses on the overall design of the reform, and identifies areas in which reform could be strengthened.

6.1. *Conclusions*

The Netherlands electricity reform has many strengths. Objectives have been clear and fit in with the larger programme of reform. There has been a good deal of consultation with future market participants, and the legislation itself is clear.

Other strengths relate to the design of the reform itself. As discussed above, this includes:

- a) **Good potential for competition in generation** because of the large number of generators and substantial import capability and transfer of majority ownership of the high voltage network to the national government.
- b) **The development of an electricity exchange based on the Nordpool design** is important in stimulating the whole market, notably supply, as well as generation. It may also encourage the development of regional exchanges in continental Europe. (International participation in this exchange is the first stage in creating a regional market).
- c) **Good co-ordination between the network regulator and the competition authority** appears to be in place with respect to terms and conditions of access to the networks. The commitment to a price-caps approach should help enhance efficiency of the utilities.
- d) **Stranded costs** are to be dealt with transparently, and set a very good basis for recovery by excluding the fall in value of generating assets from being eligible for recovery.
- e) **A level playing field for taxation** of publicly-owned companies will help ensure efficient entry into the generation market.
- f) **The green certificates programmes for renewables** is an attempt to find a transparent market-based mechanism for the development of renewable resources.
- g) **Consumer protection** institutions are in place to assist the transition of small consumers into the market.

Despite the above, there are several weaknesses in the Dutch electricity sector reform which will impede the future development of the Dutch electricity market:

- a) **Delays in implementing the secondary legislation** will delay implementation of the new network pricing and access terms thereby increasing uncertainty and hence new market entry.

- b) **Separation of the networks from the competitive activities** of generation and supply, is less than ideal. Continued common ownership of central generation, transmission and distribution, the limited degree of separation of distribution from generation or supply will require heavy and, possibly, ineffective regulatory oversight.
- c) **Delay in extending end user choice:** The relatively long period before all end users have choice and the decision not to permit customers, in the meantime, to aggregate and purchase power collectively is a significant lost opportunity for accelerating choice, increasing competitive pressures on incumbent suppliers and encouraging new suppliers. Also, the contractual arrangements between generators/suppliers and distribution companies will add to the problem.
- d) **Reciprocity requirements:** While consistent with the EU directive and the need for an adjustment period by the four (relatively small) production companies, reciprocity requirements weaken competitive price signals. Furthermore, it threatens to undermine expansion of trading over the region.
- e) **Privatisation limits** by the Minister on the grounds that private companies would be inheriting monopolies do not support the potential for competition in generation and supply and discount the significant financial and competitive benefits that privatisation could bring to the sector.
- f) **The Minister's direct role** in regulating supply prices for protected customers, controlling imports and sale of system assets and the immunity of such decisions from the competition authority, give scope for ministerial decisions to be at variance with increasing competition.

Limited structural change in the natural gas market liberalisation could give Gasunie an unfair competitive advantage in electricity markets, distorting competition between retailers in energy end-use markets. The lack of regulated TPA for gas is also a concern because of the potential for problems with non-discriminatory access to competitive gas sources by power producers.

6.2. Recommendations

The recent passage of the new Electricity Act should ensure the main features of the legislation are implemented on time to comply with the EU directive. The decision to delay the passage of the secondary legislation will mean that implementation of significant regulatory details will be delayed. Therefore, *the Netherlands should ensure that the new Electricity Act and accompanying secondary legislation are implemented as soon as possible and without further delay.*

While the framework for electricity market liberalisation is in place, the Government will be undertaking natural gas market liberalisation pursuant to the EU gas directive, which involves less stringent separation of Gasunie's production and transportation businesses. The potential market power of Gasunie in the converging natural gas and electricity markets is of concern. Therefore, *the natural gas sector should be restructured to the same extent and regulated in the same manner (by the same regulators DTE and NMa) as electricity.*

Under the new law, the Minister retains authority for many sector regulatory activities, particularly the regulation of supply tariffs. Regulatory decision making should be independent from

commercial and day to day political pressures. Therefore, *the new regulator and/or competition authority should, as soon as possible, take over the Minister's regulatory responsibilities.*

The transition to effective competition is supported by separating the potentially competitive activities from the networks, and restructuring to reduce the market power of incumbents. The continued cross ownership of generation and transmission by the four production companies remains a concern, albeit reduced by the government acquisition of a majority share of high voltage transmission. Similarly, the continued single ownership of distribution and supply functions is a concern. Therefore, *the new network regulator, DTE, should apply requirements for vertical separation stringently so that owners of network assets are encouraged to spin off and/or privatise their generating assets or remaining transmission shares, monitor closely the unbundling requirement on distribution and supply, and seek opportunities to encourage early review of these arrangements, notably separation through privatisation.*

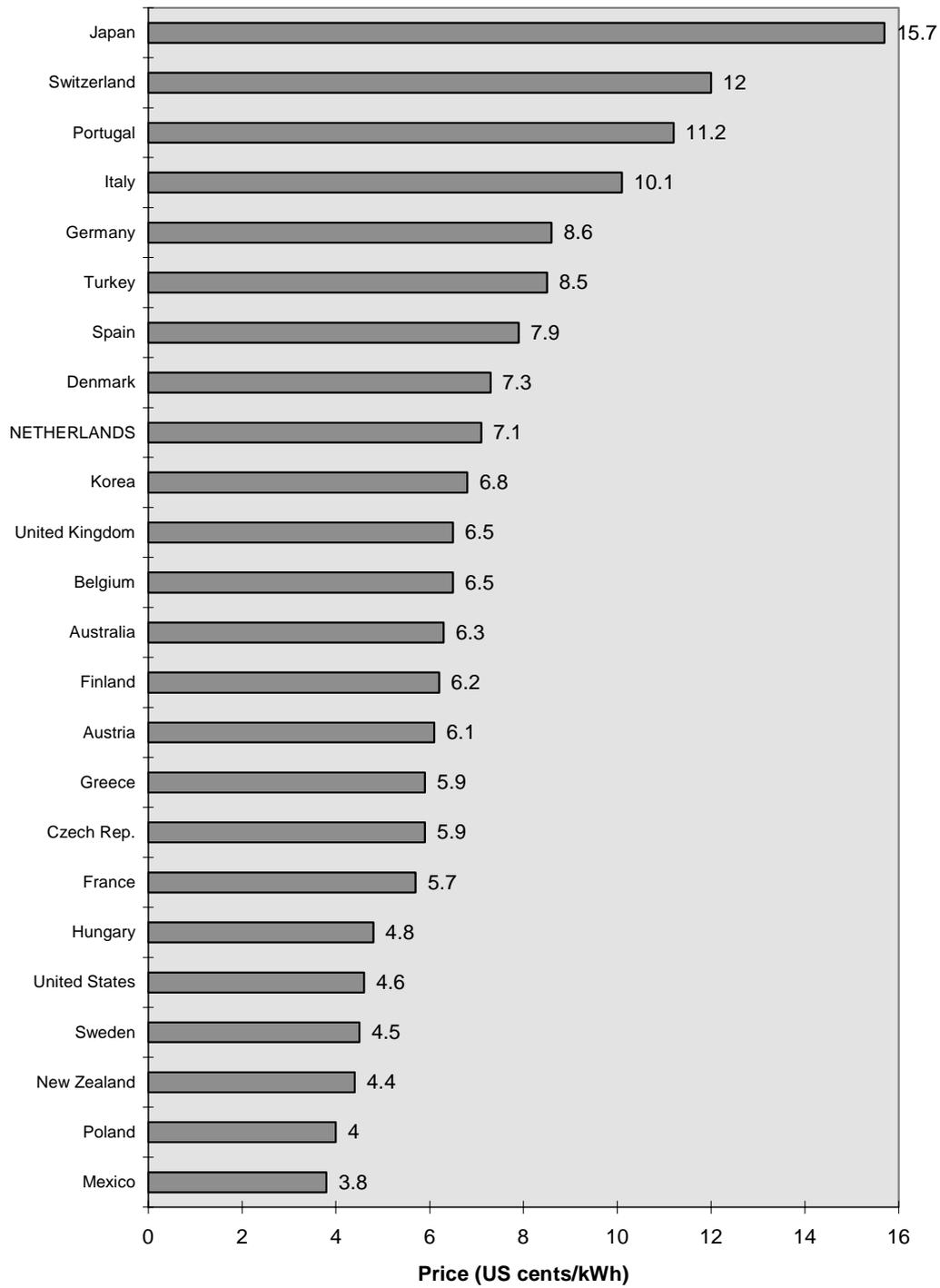
Competition law needs to be enforced vigorously where collusive behaviour, abuse of dominant position, or anticompetitive merger risk frustrating reform. Sector reorganisation is already leading to new vertical reintegration between generation and distribution/supply. A particular concern is supply tariffs for captive customers, regulated by the Minister, where vertical arrangements may lead to arrangements that lead to purchases of electricity at prices that may be above those available to liberalised customers. Therefore, *any vertical arrangements must be made subject to competition authority review.*

The lengthy transition period in the Dutch reform process and the limitations on aggregation of purchases are unnecessary barriers to the rapid introduction of vigorous competition. Therefore, *the regulator should immediately require that access rules permit small customers to aggregate to prepare utilities and customers for the retail market; and the timetable for the introduction of full choice to all consumers should be advanced as quickly as practicable.*

The reciprocity restrictions, if applied too broadly, could deprive the Dutch market of an important efficiency incentive in the early years of the market. Therefore, *restrictions on imports should be applied sparingly, if at all.*

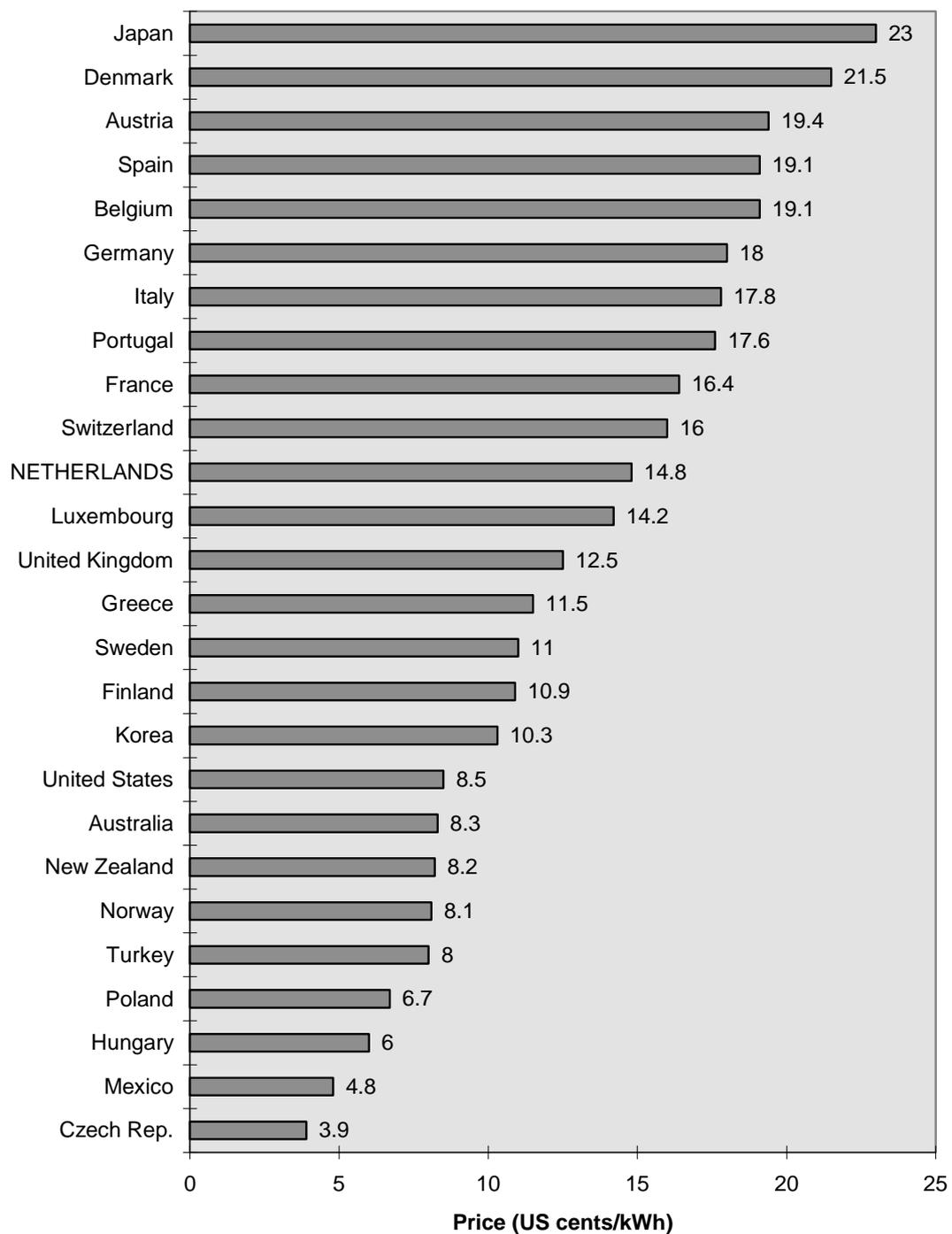
While the Dutch legislation is fully compliant with EU legislation, the potential efficiency gains in the Dutch market will only be realised if the market expands beyond Dutch borders. Therefore, *the regulator should encourage the development of compatible transmission access rules, market operations, contract terms and tariffs between the Netherlands and neighbouring electricity systems.*

**Figure 1: 1996 Electricity Prices in OECD Countries
a) Industry**



Source: IEA, 1998.

b) Households



Source: IEA, 1998.

NOTES

1. Throughout this paper, production companies refers to the four companies that own generation and high voltage transmission.
2. Under the third Environmental Action Plan proposals, released in February 1998, the government is proposing to double the REB in order to encourage increased conservation and to use a portion of revenues raised (500 million Dfl) to stimulate energy efficiency and renewable energy (VROM, 1998).
3. Gasunie is 50 per cent state owned (10% directly, 40% through a holding company), with Shell and Esso each holding 25% shares.
4. For example, if a major renewable project was delayed, this could lead to an unexpected scarcity of certificates given the lead-time for renewables projects. This problem could be compounded if all green certificates had to be handed over on a particular date. There are different techniques to mitigate these effects, such as permitting banking of certificates (*i.e.*, allowing unused certificates to be used in future years), having the Minister hold back a certain percentage of certificates, or futures markets in the certificates (provided there was sufficient liquidity to support this).

BIBLIOGRAPHY

- Brattle Group (1998), An Economic Analysis of the Proposed Merger between EPON, EPZ, EZH, SEP, and UNA, March.
- Cath I.G.F., D.F. Edens, K. Sevinga, H. Huisman, (1994), "Competition Law Implications of Deregulation and Privatisation in the Netherlands", *Tidjschrift voor Europees en economisch recht*, Mei 1994, 42e jaargang no. 5.
- CI (1995), Consumers International, Balancing the Scales, Part 2, Consumer Protection in the Netherlands and Germany.
- CPB (1997), Netherlands Bureau for Economic Policy Analysis, *Challenging Neighbours - Rethinking German and Dutch Economic Institutions*, Chapter 13, Electricity and Gas Markets, p. 467-502.
- Dykstra M. (1998), "How Efficient is Dutch Electricity Generation?", Quarterly Review of CPB, the Netherlands Bureau for Economic Policy Analysis, Report 1997/4, p. 45-47.
- EC (1990), Council Directive of 29 October 1990 (90/547/EEC) on the transit of electricity through transmission grids.
- EC (1996), Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 concerning common rules for the internal market of electricity.
- EC (1997), European Commission (prepared by London Economics), *The Single Market Review: Single Energy Market*, Subseries II, Volume 10.
- EC (1998), Report from the Commission to the Council and the European Parliament on State of Liberalisation of the Energy Markets, XVII/85/98-EN rev.2, March 1998.
- EE (1998), "Climate Change: Eleventh-Hour Deal on CO₂ Emission Cuts Burden-Sharing", Europe Energy No. 516, 19 June, p.19-20.
- EER (1998), Electrabel to open early to big users to avoid reciprocity problems, European Energy Report, 5 June, p. 13.
- EiN (1998), "Electriciteit in Nederland, 1997", commissioned by N.V. SEP and EnergieNed June.
- EnergieNed (1997), *Energiedistributie in Nederland, 1996*, Arnhem.
- Haffner and van Bergeijk (1997), Haffner, R.C.G., and van Bergeijk, P.A.G., eds., *Regulatory Reform in the Netherlands - Macroeconomic Consequences and Industry Effects*, Chapter 2, "Electricity", p. 9-14, and Chapter 7, "Macroeconomic Consequences", p. 39-46.
- IEA (1996), International Energy Agency, Energy Policies of IEA Countries, *The Netherlands 1996 Review*, OECD, Paris.
- IEA (1998a), International Energy Agency, Energy Policies of IEA Countries, *The United Kingdom 1998 Review*, Paris, OECD.

- IEA (1998b), International Energy Agency, *Energy Prices and Taxes*, First Quarter 1998, OECD, Paris.
- MEZ (1996a), Ministry of Economic Affairs, “Third White Paper on Energy Policy” (in English), February 1996.
- MEZ (1996b), Ministry of Economic Affairs, “Current Lines Towards Electricity Reform”, (in English), 8 July, available at www.minez.nl/ezenglish/index.
- MEZ (1997), Ministry of Economic Affairs, “Renewable Energy - Advancing Power” (in English), April, available at www.minez.nl/ezenglish/index/.
- NEA (1998), The Netherlands Electricity Act, 1998 as passed by the lower chamber of the States General, 24 March 1998, English translation available at www.minez.nl/ezenglish/index/.
- NCA (1997), The Netherlands Competition Act, 1997, English translation.
- NSL (1998), *Electriciteitsbesluit 1998* (secondary electricity legislation), in Dutch, available at www.minez.nl/energie/stroom/html/nfelbes.pdf.
- OECD (1997), *The OECD Report on Regulatory Reform, volume 1, Sectoral Studies* and *volume 2, Thematic Studies*.
- PiE (1997a), *Dutch Strengthen the Foundations*, Power in Europe, 18 July, 253/3-4.
- PiE (1997b), *Netherlands: Supply*, Power in Europe, 29 August, 256/19-20.
- PiE (1997c), *Netherlands: Renewables*, Power in Europe, 12 September, 257/17-18.
- PiE (1997d), *Green Light for Dutch Exchange*, Power in Europe, 26 September, 258/1.
- PiE (1997e), *Netherlands: Tariffs*, Power in Europe, 10 October, 1997, 259/21.
- PiE (1997f), *Netherlands: Interconnection*, Power in Europe, 21 November, 262/21.
- PiE (1997g), *Dissent and the GPB*, Power in Europe, 19 December, 264/4-5.
- PiE (1998a), *Breakthrough for GPB*, Power in Europe, 16 January, 265/3-5.
- PiE (1998b), *GPB leaves Dutch shaken and stirred*, Power in Europe, 22 May, 274/2-3.
- PiE (1998c), *Netherlands: Projects*, Power in Europe, 5 June, 275/19.
- PiE (1998d), *Netherlands: Energy Taxes*, Power in Europe, 19 June, 276/21.
- QERU (1998), Electricity Threshold Reduction Timetable Announced, Queensland Australia Electricity Reform Unit, available at <http://www.qeru.qld.gov.au/publications/media/mrapril26.htm>
- SEP (1996), Electricity Plan 1997-2006 (and Notes to Electricity Plan 1997-2006).
- UNI (1997), “Programs and Prospects for the European Electricity Sector”, EURPROG Report prepared for UNIPEDA, June 1997.
- VROM (1998), Press release on the Third National Environmental Policy Plan, 5 February, Netherlands Ministry of Housing, Spatial Planning and Environment, in English, available at <http://www.minvrom.nl/news/press/986e.htm>.
- Wijers (1996), Letter by G.J. Wijers, Minister of Economic Affairs to Second Chamber re: “Current Lines towards Electricity Reform” 8 November, English translation available at www.minez.nl/ezenglish/index.

Wijers *et al.* (1998), Letter from G.J. Wijers, Minister of Economic Affairs, W. Sordrager, Minister of Justice, and H.F. Dijkstal, Minister of Home Affairs, to the Second Chamber re: “Vision of Supervision”, English translation, 12 January.