The Covenant
concerning the
Reduction of Sulphurdioxide- and Nitrogenoxides Emissions
by the
Power Generation Industry

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# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables</td>
<td>3</td>
</tr>
<tr>
<td>Figures</td>
<td>3</td>
</tr>
<tr>
<td>I  Introduction</td>
<td>4</td>
</tr>
<tr>
<td>II Case Context</td>
<td>5</td>
</tr>
<tr>
<td>1. Covenants as policy instrument in Dutch Environmental Policy</td>
<td>5</td>
</tr>
<tr>
<td>2. Acidification: the problem</td>
<td>8</td>
</tr>
<tr>
<td>3. The power generation industry</td>
<td>13</td>
</tr>
<tr>
<td>4. Dutch acidification policy</td>
<td>19</td>
</tr>
<tr>
<td>5. European policy</td>
<td>22</td>
</tr>
<tr>
<td>III The process</td>
<td>23</td>
</tr>
<tr>
<td>6. Negotiations</td>
<td>23</td>
</tr>
<tr>
<td>7. Contents of the Covenant</td>
<td>26</td>
</tr>
<tr>
<td>8. Implementing the covenant</td>
<td>27</td>
</tr>
<tr>
<td>IV Analysis of the case</td>
<td>30</td>
</tr>
<tr>
<td>9. The performance of the covenant</td>
<td>30</td>
</tr>
<tr>
<td>10. Explaining the performance</td>
<td>34</td>
</tr>
<tr>
<td>V Conclusion</td>
<td>37</td>
</tr>
<tr>
<td>Appendix I: The text of the covenant</td>
<td>39</td>
</tr>
<tr>
<td>References</td>
<td>52</td>
</tr>
</tbody>
</table>
Tables
Table 1: Deposition of acidifying substances 10
Table 2: Contribution of the foreign countries and the various sectors to the acid deposition in the Netherlands in 1997 in percentages 11
Table 3: Emissions per targetgroup 12
Table 4: Power generation in the Netherlands and Emission of SO2 and Nox 13
Table 5: Electricity Act of 1989 14
Table 6: The old and new electricity regime in the Netherlands 17
Table 7: Environmental pressure power generation industry 18
Table 8: Emission of SO2 and NOx by the power generation industry 28

Figures
Figure 1: The organisation of the Dutch electricity system upto 1995 15
Figure 2: The policy process and performance indicators 31
I Introduction

In 1990, the power generation industry, the Dutch ministry of Environment, and the provinces signed a covenant on the reduction of sulphurdioxide and nitrogenoxides emissions by the power generation industry. Emissions of sulphurdioxide (SO2) and nitrogenoxides (NOx) are a major cause of acidification, a problem that has negative effects on nature and materials such as buildings. In the Netherlands, acidification has resulted in a significant degradation of the woods. The Dutch government therefore formulated an acidification policy which has been part of the national environmental policy plans since 1989. The targets include maximum levels of emissions of SO2 and NOx and NH3 (ammonia) for the relevant sectors. Also for the power generation industry, targets have been formulated in order to reduce the emissions of SO2 and NOx. Policy instruments used include regulation and the covenant. This covenant is the focus of this paper.

The period covered by the covenant is 1990 till 2000. Even before the end of this period it is clear that the targets - the formulated emission reductions of SO2 and NOx - have been realised by the sector. The covenant is a success. In the context of the NEAPOL project (Negotiated Environmental Agreements: Policy Lessons to be Learned from a Comparative Case Study) this paper aims to explain the success of the covenant from the specific characteristics of the covenant and the characteristic of the economic-institutional context where in the covenant was negotiated and implemented.

Part II of the report describes the setting in which the covenant was agreed and implemented: section 1 describes the development of the covenant as an instrument in Dutch environmental policy. Section 2 gives a general overview of the problem of acidification; section 3 describes the specifics of the power generation industry and the developments of this sector over the years; sections 4 and 5 give an overview of the acidification policy of the Dutch government and the European authorities.

Part III of this paper describes the process leading to signing the covenant (section 6); its content (section 7) and the results (section 8).

The case is analysed in part IV: the results of the covenant are analysed in terms of the four criteria of performance - feasibility, applicability, effectiveness and efficiency, and resource development (section 9). Section 10 explains the performance of the covenant by making use of four hypotheses that each explain the performance of the covenant from a different factor.

Finally, concluding remarks are given in part V.
II The Case Context

1. Covenants as policy instrument in Dutch environmental policy

In the Netherlands more than 100 covenants have been signed between the Dutch government and private actors. Over the years, the covenant has become a well known and widely used instrument in Dutch environmental policy. Based on experiences with the instrument, it has been further developed. To understand the setting in which the covenant concerning the reduction of SO2 and NOx was negotiated and signed, this section will shortly describe the history of covenants as part of Dutch environmental policy.

History of Covenants

Three phases can be distinguished in the development of covenants in the Netherlands (Glasbergen, 1998, p. 133-156). The first environmental covenants were introduced in the second half of the 1980s. These initial covenants concerned only one issue; were closed between the ministry of Environment and one actor (a company or branch organisation) and had mostly a symbolic function. In fact, these covenants were also called ‘gentlemen’s agreements’ since their legal status - enforceability - was not clear.

The discussions on the legal status of the covenant as a policy instrument dominated the second phase. The question was how a covenant being a contract under civil law relates to regulations under public law (environmental legislation). Sofar, the permit had been the central instrument in Dutch environmental policy: it is forbidden to perform any environmentally damaging activities without having a permit. Responsibility for the permit system lies with the local and regional authorities. These government bodies are supposed to translate the national environmental aims into permits for individual companies. The permit giving procedure has been determined in law and involves fixed elements, for example the possibility for third parties to object and appeal against the permit. There is no such standard procedure for covenants. Especially the environmental movement was concerned about deals made between the government and industry because they were not able to influence this process. Several court cases took place in these years. The outcome of these cases was basically that a covenant is a voluntary agreement that cannot contradict the system of public law: it is possible to use a covenant to anticipate upon regulations that have not yet been formulated. And it is also possible to use a covenant to supplement existing regulation. But a covenant can never replace something that has already been established in public law.

At the same time, the covenant instrument fitted with the idea of ‘internalisation’, the idea that the industry has to take its responsibility and deal with the problems. Within this setting, the
government closed many covenants among others the covenant concerning the reduction of SO2 and NOx emissions by the power generation industry (June 1990). Although this covenant is still a single issue, single actor covenant also covenants are closed with more complex sectors of industry.

Key term of the third phase is the so-called target group policy (Bressers and Klok, 1996, p. 448-449). Goal of the Dutch government was to achieve a more integral environmental policy. This target group policy was officially announced in the first National Environmental Policy Plan (NEPP, 1989) and the NEPP-plus (1990). A fundamental principle underlying this approach is that the responsibility for reaching the environmental targets lies primarily with the target group (Suurland, 1994). In the notes which specified the target group policy, 13 branches of trade were selected for the introduction of negotiated agreements. Now the covenants become multiple issue involving more actors! The involved branches of trade contain 12,000 companies which have more than five employees. Together they are supposed to be responsible for more than 90 per cent of the industrial environmental burden in the Netherlands (Klok and Kuks, 1994, p. 89). These agreements were planned to be concluded by the end of 1992. However, the signing of the agreements was delayed, except for three branches of trade. By the end of 1997, nine of the selected branches of trade had concluded a negotiated agreement. The delay was merely due to factors that appeared during the consultation process. Delay was not caused by complications during the implementation, or by changed policy approaches. Reasons for the branches of trade to join into the negotiated agreements are first the recognition that the continuation of industrial production is at stake in defining the boundaries of sustainable development. Second, the influence of the industry would only increase compared to the situation at present. Finally, the market increasingly made demands on environmental conditions (Van den Broek and Korten, 1997). Furthermore, Suurland (1994) recognises the major advantage of the streamlining of licensing and enforcement procedures. Besides, he emphasises the advantages of integration of sectoral industrial and environmental policies and the integration of environmental and strategic company planning.

**Legal Status**

The concluded negotiated agreements appear to have many characteristics in common (Van den Berg, 1996). First, they share a result obligation regarding the formulation of an Environmental Company Plan and an annual report on the progress of the implementation. Besides, they have in common the judicial status of the agreement. All can be defined as an agreement in the sense of civil law. Third, the agreements share the opportunity for sanctions if companies do not come up to the agreement. The target group agreements apply to all company’s in the involved branch of trade. If a company fails to implement the agreement, the involved authority is allowed to apply
supplementary conditions regarding the company’s permit. Furthermore, the agreements have in common that they create a consultation structure. Finally, they share conditions regarding the adaptation or termination of the agreement.

The process that generally leads to a target group negotiated agreement is usually characterised by signing a declaration of intent on the company level. A specification of the declaration of intent for separate companies is made in the Company Environmental Plan (“bedrijfsmilieuplan”). Neither the declaration of intent, nor the Company Environmental Plan replace the environmental permit. However, the authority is obliged to take the Company Environmental Plan into account during the process of granting a permit. The declarations of intent contain conditions for the environmental targets for the branches of trade which belong to the involved target group. The overall picture of environmental targets of a certain branch of trade, including the energy consumption that according to the authority needs to be realised, is called the Integral Environmental Target (“integrale milieutaakstelling”, IMT). Representatives of the involved branch of trade and the involved authority together participate in a Consultative Committee that co-ordinates the implementation of the target group policy for that branch of trade. This Consultative Committee reports annually to the Minister of the Environment. All agreements need to be officially evaluated once in every four years. Companies which are not part of a negotiated agreement are still subject to the old situation. Environmental measures are enforced by permit prescriptions.

Since the first use of a covenant by the Dutch government, the instrument has been further developed. In 1995 the Dutch Prime Minister presented a document which contained indications for negotiated agreements (Staatscourant, 1995:249). The document poses that whenever a choice has to be made between regulation or a negotiated agreement, regulation should be preferred. However, if more efficacy and effectiveness is expected of a negotiated agreement, the option could be considered in four cases. First, in anticipation of regulation, a negotiated agreement can meanwhile reach results. Second, if regulation is expected to become superfluous in the near future, this can be speed up by a negotiated agreement. Third, a negotiated agreement can serve the goal of exploring possible forms of regulation. Finally, a negotiated agreement might be able to support regulation.

The challenge of environmental policy has shifted from winning corporate co-operation to harnessing corporate creativity. Dutch environmental policy is now emphasising consultation between government and target groups while encouraging self-regulation among businesses.

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1 Actually, the agreement itself is usually called “declaration of intent”, even though the agreement is legally binding.
Such a policy calls for delicate handling. Because consultation can only succeed if realisation of the environmental objectives is ultimately perceived by all participants to be ‘inevitable’, and this perception can only be achieved by means of sufficient social and political pressure. In such a twin-track policy, therefore, it is vital to achieve an optimal fine-tuning of, on the one hand, legislation and enforcement and, on the other, consultation and self-regulation. The only way out of this dilemma is to make a differentiation, in terms of both the application and the nature of the legal instruments, between positive and active companies, law-abiding but passive companies, and uncooperative companies. In other words, legal instruments, which will certainly continue to be based on licensing requirements for some time, must be applied more flexibly. Companies with an environmental management system -which is recognised by the authorities and, preferably, also certified by an external body- can qualify for an integral permit on the basis of that system and an approved business environmental plan. In such cases, policy enforcement can partly take place through audited progress reports.

2. Acidification: the problem

Acidification is the result of atmospheric pollution by (directly or indirectly) acidifying components - sulphur dioxide (SO2), nitrogen oxides (NOx), and ammonia (NH3). When there are too much of these substances that deposit on the ground or water, negative effects occur. For instance, certain kinds of fish are directly affected if the acidity of lakes and streams increases. In soils, surplus acidity causes damage to micro-organisms, influences the supply of nutrients and can mobilise (toxic) metals such as aluminium. On the longer term, this can have an impact on the quality of groundwater stocks and the health of plants and trees. Besides these effects on the environment, acidification also degrades materials such as buildings (National Environmental Policy Plan 3, 1998).

Acidification is caused by sulphur dioxide, nitrogen oxides and ammonia. The anthropogeneous emission of sulphur and nitrogen oxides is strongly related to the burning of fossil fuels. Oil and coal contain variable amounts of sulphur that are converted into sulphur dioxide during combustion. The emission of sulphur can at considerable cost be reduced by the desulphurisation of fuels and flue gases. Natural gas hardly contains sulphur. The most important sources of sulphur dioxide are therefore coal- and oilfired power plants, oil refinery and other industrial combustion processes. Nitrogen oxides are emitted from combustion processes. They are formed by the reaction of nitrogen and oxygen in the air under the influence of the heat produced by the burning of any kind of fuel. Technological abatement of emissions of nitrogen oxides entails the adaptation of
the combustion process itself or the (catalytic) cleaning of fuel gases. The dominant source of nitrogen oxide is road traffic. Other major sources are electricity generation and various other industries.

Apart from a limited amount of industrial process emissions, in the Netherlands agriculture is the sole responsible for the emission of ammonia. Particular in areas with high concentrations of intensive livestock industry (pigs, chicken), stables, manure storage and spreading of manure onto the land bring large amounts of ammonia into the air. Technological measures range from covering storage tanks to advanced methods of injecting manure into the soil. (Liefferink, 1995, p.70).

Typical of the acidification problem is that it is transferred across national borders. In fact, of the acidifying emissions in the Netherlands, 66% of the SO2 emissions; 49% of the NH3 and 91% of the NOx is transported to our neighbours. At the same time, we import these substances: 45% of the acid deposition in the Netherlands has been imported from abroad (Dougle and Kroon, 1998, p. 11).

Research on acidification in the Netherlands therefore often focuses on the emission data of the acidifying compounds as well as on the deposition data. Also the Dutch policy takes deposition data as the basis for setting an overall target for its acidification policy. The targets for the different sectors that contribute to the acidification problem are formulated in emission data (see section 3 of this report)

The National Institute of Public Health and the Environment (RIVM) studies and reports on the state of the Dutch environment. The national government is the primary commissioning body for these activities. In the environmental balance sheet of 1998 (Milieubalans 1998), the RIVM reports on the state of the environment of 1997, in particular in relation to the policy. On the issue of acidification the reports states: In the period from 1980 to 1997, the average acid deposition on the Netherlands has decreased from 7200 acid equivalents/ha per year to 4000 acid equivalents/ha per year (45%). This is mainly the result from a decrease of the deposition of SO2 by 77%. The deposition of NOx decreased by 20% and the NH3 deposition remained at the same level.
Table 1: Deposition of acidifying substances.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total acid deposition</th>
<th>NOx</th>
<th>SO2</th>
<th>NH3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>7200</td>
<td>880</td>
<td>4140</td>
<td>2180</td>
</tr>
<tr>
<td>1981</td>
<td>7240</td>
<td>880</td>
<td>4140</td>
<td>2220</td>
</tr>
<tr>
<td>1982</td>
<td>6680</td>
<td>860</td>
<td>3580</td>
<td>2240</td>
</tr>
<tr>
<td>1983</td>
<td>6280</td>
<td>880</td>
<td>3180</td>
<td>2220</td>
</tr>
<tr>
<td>1984</td>
<td>6550</td>
<td>880</td>
<td>3400</td>
<td>2270</td>
</tr>
<tr>
<td>1985</td>
<td>6850</td>
<td>850</td>
<td>3620</td>
<td>2380</td>
</tr>
<tr>
<td>1986</td>
<td>6000</td>
<td>821</td>
<td>3020</td>
<td>2180</td>
</tr>
<tr>
<td>1987</td>
<td>5900</td>
<td>840</td>
<td>2580</td>
<td>2480</td>
</tr>
<tr>
<td>1988</td>
<td>4840</td>
<td>740</td>
<td>1920</td>
<td>2180</td>
</tr>
<tr>
<td>1989</td>
<td>4640</td>
<td>750</td>
<td>1680</td>
<td>2210</td>
</tr>
<tr>
<td>1990</td>
<td>4600</td>
<td>730</td>
<td>1660</td>
<td>2210</td>
</tr>
<tr>
<td>1991</td>
<td>4340</td>
<td>690</td>
<td>1520</td>
<td>2130</td>
</tr>
<tr>
<td>1992</td>
<td>4260</td>
<td>750</td>
<td>1540</td>
<td>1970</td>
</tr>
<tr>
<td>1993</td>
<td>4520</td>
<td>740</td>
<td>1520</td>
<td>2260</td>
</tr>
<tr>
<td>1994</td>
<td>4520</td>
<td>810</td>
<td>1320</td>
<td>2390</td>
</tr>
<tr>
<td>1995</td>
<td>4040</td>
<td>740</td>
<td>1100</td>
<td>2200</td>
</tr>
<tr>
<td>1996</td>
<td>3880</td>
<td>700</td>
<td>1100</td>
<td>2080</td>
</tr>
<tr>
<td>1997</td>
<td>3990</td>
<td>700</td>
<td>960</td>
<td>2330</td>
</tr>
<tr>
<td>2002</td>
<td>3300</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is predicted that in 2002 the total acid deposition will be 3300. Still too much according to the scientists: they state that the maximum level of acid deposition that Dutch nature can handle is 1400 acid equivalents/ha. This is also referred to as the 'critical deposition level'.

In addition, the RIVM gives an overview of the background of the acid deposition in 1997 in the Netherlands:

Table 2: Contribution of foreign countries and various sectors to acid deposition in the Netherlands in 1997 in percentages
In 1997, the biggest contributors to the acid deposition are the foreign countries (45%) and the Dutch agricultural sector (34%). The agricultural sector (NH3) and the transport sector (NOx) are the sectors that are most problematic. The power generation industry nowadays is responsible for only 1% of the total acid deposition in the Netherlands in 1997! The following table shows that in the past the sector had a significant contribution to the total SO2 and NOx emissions in the Netherlands.
Table 3: Emissions per targetgroup
(Source: Dougle and Kroon, 1998, p: 45)

<table>
<thead>
<tr>
<th>NOx (kton)</th>
<th>1985</th>
<th>1990</th>
<th>1995</th>
<th>2000 (expected)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumers</td>
<td>26</td>
<td>21</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>Traffic</td>
<td>335</td>
<td>351</td>
<td>314</td>
<td>261</td>
</tr>
<tr>
<td>Agriculture</td>
<td>6</td>
<td>10</td>
<td>15</td>
<td>27</td>
</tr>
<tr>
<td>Industry</td>
<td>84</td>
<td>76</td>
<td>65</td>
<td>69</td>
</tr>
<tr>
<td>Services</td>
<td>14</td>
<td>11</td>
<td>12</td>
<td>17</td>
</tr>
<tr>
<td>Powergeneration</td>
<td>88</td>
<td>81</td>
<td>57</td>
<td>37</td>
</tr>
<tr>
<td>Refineries</td>
<td>20</td>
<td>19</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>580</td>
<td>574</td>
<td>506</td>
<td>448</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic</td>
<td>23</td>
<td>27</td>
<td>31</td>
<td>22</td>
</tr>
<tr>
<td>Industry</td>
<td>68</td>
<td>50</td>
<td>31</td>
<td>24</td>
</tr>
<tr>
<td>Powergeneration</td>
<td>67</td>
<td>48</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>Refineries</td>
<td>87</td>
<td>70</td>
<td>59</td>
<td>33</td>
</tr>
<tr>
<td>Wastedisposal</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>255</td>
<td>203</td>
<td>142</td>
<td>94</td>
</tr>
</tbody>
</table>

Production of electricity by combustion of coal, oil or gas causes emissions of SO2 (burning of coal) and Nox (all combustion processes). The next table shows how much electricity is produced in the Netherlands over the years 1993 – 1997 and how much SO2 and Nox is emitted. Please note that a small part of the production process does not lead to electricity generation but delivers heat. Of course, in this process emissions of SO2 and Nox do take place.
### Table 4: Power generation in the Netherlands and the Emission of SO2 and NOx

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Production (GWh)</td>
<td>58 684</td>
<td>59 179</td>
<td>58 650</td>
<td>59 488</td>
<td>58 760</td>
</tr>
<tr>
<td>Coal (%)</td>
<td>40</td>
<td>41</td>
<td>45</td>
<td>42</td>
<td>37</td>
</tr>
<tr>
<td>Gas (%)</td>
<td>56</td>
<td>52</td>
<td>49</td>
<td>52</td>
<td>57</td>
</tr>
<tr>
<td>Nuclear (%)</td>
<td>4</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Co-generation (TJ)</td>
<td>20 022</td>
<td>20 423</td>
<td>15 521</td>
<td>13 773</td>
<td>14 026</td>
</tr>
<tr>
<td>Emission of SO2</td>
<td>12 446</td>
<td>18 693</td>
<td>16 180</td>
<td>17 846</td>
<td>22 080</td>
</tr>
<tr>
<td>Emission of NOx</td>
<td>35 174</td>
<td>42 630</td>
<td>48 880</td>
<td>53 426</td>
<td>58 543</td>
</tr>
</tbody>
</table>

3. **The power generation industry sector**

The Dutch electricity system developed out of small scale municipal electricity companies, established in the first decades of this century. Technology-improvements guided the electrification of the country, headed by SEP\(^2\) the grid co-ordinator since 1949. Between 1950 and 1989, electricity generation and distribution was well organised in small scale monopolies, with clearly defined positions and legally authorised tasks reflecting the public utility character of electricity supply and the company’s public service obligations. Until 1989 the system was publicly owned and public service oriented in operation and performance.

The years 1985-1998 mark a period of institutional instability in the Dutch electricity system, due to several tensions in the system and the emerging debate on the liberalisation of the European electricity market. Before 1985 generation, transport and distribution was integrated in 14 larger generation/distribution companies each holding leading market positions. Ten of them with provincial ownership structures and regionally based, and four with municipal ownership.

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1 A large part of this section is written by dr.M.J. Arentsen, energy expert at the CSTM
2 SEP stands for Samenwerken ElektriciteitsProduktiebedrijven (Cooperating electricity production companies)
structures, operating in the urban areas in the western part of the country. A debate, started in 1985 reinforced the need to improve the efficiency in electricity supply by concentration. Distribution and generation disintegrated and, mergers reduced the number of generation companies to four.¹ SEP reinforced its leading and managing position in generation, and headed the technical and economic dispatch of the power plants owned by the four generation companies. SEP also headed the high voltage transport and import and export of electricity and the forecast of electricity demand and supply, legally obliged by the electricity act of 1989.

In 1990, the year in which the covenant was signed, the electricity act 1989 provided for the legal structure of the Dutch electricity system. Table 3 displays the major features of the value chain of electricity as it was legally structured by the electricity act 1989.

Table 5: Electricity Act of 1989

<table>
<thead>
<tr>
<th>Value chain</th>
<th>Electricity act 1989</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation</td>
<td>· Long term strategic and operational planning by SEP</td>
</tr>
<tr>
<td></td>
<td>· Central economic and technical dispatch by SEP</td>
</tr>
<tr>
<td>Transport/Services</td>
<td>· De facto SEP monopoly</td>
</tr>
<tr>
<td></td>
<td>· Technical dispatch by SEP, from 1989 on also economic dispatch</td>
</tr>
<tr>
<td></td>
<td>· Internal rules electricity industry</td>
</tr>
<tr>
<td>Distribution</td>
<td>· Geographic monopoly distribution company</td>
</tr>
<tr>
<td>Wholesale</td>
<td>· De facto SEP monopoly on import and export²</td>
</tr>
<tr>
<td>Retailing</td>
<td>· Not operational, integrated with distribution</td>
</tr>
<tr>
<td>Products and services</td>
<td>· No (commercial) services in combination with electricity supply allowed</td>
</tr>
</tbody>
</table>

¹ The initiative to disintegrate generation and distribution was actually taken by the Dutch government of that time. For a more detailed description of the debate see, Arentsen, Künneke and Moll, 1997.
² The Electricity Act 1989 did allow for direct import of electricity by of giant consumers, but the costs on transport were high, leaving SEP in a de facto monopoly position.
The table clearly illustrates the distinction between production and distribution of electricity and the dominant position of SEP in generation and high voltage transmission. SEP also held a de facto monopoly in import and export of electricity. The actual functioning of the Dutch electricity system is illustrated in figure 1 below.

SEP was organised as a limited liability company formed under private law, and the four regionally based generation companies, EPON, UNA, EZH and EPZ, were its shareholders. In the electricity act 1989 SEP was re-established as a co-ordinating device to safeguard efficiency in production and high voltage transmission of electricity. SEP developed a system of technical dispatch, allowing only the most efficient power plants to be connected to the grid, in combination with a system of national pooling prize. SEP was the co-ordinator of production by the four generation companies and it actually dominated generation and transmission in the Netherlands. SEP became the dominant player in the electricity system, deciding about import, investments, transmission costs and electricity prices. Especially the Dutch distribution companies, owning...
shares of two generation companies, were eager about the dominance of SEP, because SEP dominated decision making among production companies and dictated electricity prices.

These distribution companies used the opportunity offered by the electricity act 1989 to start production of electricity outside the central generation capacity co-ordinated by SEP. They invested in CHP-technology, in many cases in joint venture with private industry, putting pressure on the centrally co-ordinated electricity generation. At the time distributors started their investments, CHP-technology became strongly supported by government for environmental reasons and with the help and support of private industry, distributors eroded the monopolistic price setting of the generation companies by creating overcapacity in the system. SEP and the generators were forced to negotiate an agreement with distributors to manage surplus capacities. In this way distributors managed to reshuffle positions vis-à-vis generation companies favourable to their own position.

The institutional tensions, following these decentral production initiatives by distributors, were mitigated for a couple of years by the ongoing European debate on liberalisation of the European electricity market. Dutch public authorities took advanced positions in the European debate on liberalisation, guided by a change in political climate domestically. The social liberal coalition took over power in 1994 relieving the conservative coalition, in power for two decades and dominated by Christian democrats. The new coalition, strongly advocating liberalisation and deregulation, launched a White Paper on energy, designing new orders for the national energy system on electricity and gas by the end of 1995. In fact, the White Paper reflected liberalisation proposals developed and discussed by the European Union to harmonise the internal electricity and gas market. Dutch Parliament accepted and approved the liberalisation-ideas proposed by the social liberal coalition, marking the point of no return that accelerated the process of restructuring the national electricity supply industry. At the same time the EU accepted the final draft of the EU-liberalisation directive, the Dutch government took the next step in designing the new structure for the national electricity market that finally resulted in a proposal of a new electricity law by the end of 1997.

Table 6 illustrates the main changes in the value chain of electricity as proposed by the new electricity act 1998.

Table 6: The old and new electricity regime in the Netherlands

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Generation</td>
<td>• Long term strategic and operational planning by SEP</td>
<td>• Free and unconditional except standard legal obligations</td>
</tr>
<tr>
<td></td>
<td>• Central economic and technical dispatch by SEP</td>
<td></td>
</tr>
<tr>
<td>Transport/Services</td>
<td>• De facto SEP monopoly</td>
<td>• Monopoly of the grid company</td>
</tr>
<tr>
<td></td>
<td>• Technical dispatch by SEP, from 1989 on also economic dispatch</td>
<td>• Free access based on a system of regulated TPA</td>
</tr>
<tr>
<td></td>
<td>• Internal rules electricity industry</td>
<td>• Independent system operator</td>
</tr>
<tr>
<td>Distribution</td>
<td>• Geographic monopoly distribution company</td>
<td>• System of licenses to supply captive customers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Tariff regulation and efficiency measures</td>
</tr>
<tr>
<td>Wholesale</td>
<td>• De facto SEP monopoly on import and export&lt;sup&gt;1&lt;/sup&gt;</td>
<td>• No restriction, but imports on the base of reciprocity</td>
</tr>
<tr>
<td>Retailing</td>
<td>• Not operational, integrated with distribution</td>
<td>• Free with the exception of grid companies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Stepwise free choice electricity supplier</td>
</tr>
<tr>
<td>Products and services</td>
<td>• No (commercial) services in combination with electricity supply allowed</td>
<td>• No restrictions on products and services</td>
</tr>
</tbody>
</table>

The act obliges an administrative and financial unbinding of generation, trade and supply on the one hand and transmission and distribution on the other. Access to the grid is arranged as regulated TPA and the market will be liberalised stepwise, beginning in 1999 (650 giant consumers > 2MW, representing 34% of the market), next in 2002 (some 56,000 small industrial consumers up to 3*80 Amp, representing 27% of the market) and finally in 2007 (some 6.7 million households, representing 39% of the market). In 1999 the act became operative and from that time on competition was launched in the Dutch electricity market.

As a consequence, SEP will be dismantled and continued under the name TenneT, as the national transmission company in charge with the high voltage transport of electricity. The four

<sup>1</sup> The Electricity Act 1989 did allow for direct import of electricity by of giant consumers, but the tariff structure on transport made the imports de facto inefficient, leaving SEP in a de facto monopoly position.
producers no longer co-ordinate their generation activities as in the pre-1998 period by technical dispatch and national price pooling. By the end of 1999, two of the four generation companies were in a process of foreign take over.

Finally, we present some key figures of the power generation sector in the Netherlands (Source: Annual Report SEP 1997):

**The emission of SO2 and NOx**

The production of electricity causes the emission of sulphurdioxide, nitrogen oxides and CO2. Thus within the sector, the environmental focus is on the acidification problem and the problem of climate change. In this paper the focus is on the acidification problem and the way the sector approaches the problem.

As we have seen earlier in this chapter, the emissions of SO2 and NOx by the power generation industry have decreased significantly over the years. This is especially the case for the emission of SO2 as you can see in the table below. In the next section we will see how the sector achieved these reductions by explaining the Dutch acidification policy and the response (actions and approaches) of the power generation industry.

**Table 7: Environmental pressure power generation industry**

(Source: Environmental balance Sheet 1998, RIVM)

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>100</td>
<td>103</td>
<td>105</td>
<td>102</td>
<td>101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SO2</td>
<td>100</td>
<td>23</td>
<td>8</td>
<td>10</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Nox</td>
<td>100</td>
<td>89</td>
<td>60</td>
<td>52</td>
<td>44</td>
<td>43</td>
<td></td>
</tr>
</tbody>
</table>

4. **Dutch Acidification Policy**

The problem of acidification came on the Dutch policy agenda in 1983: a call was made for an extensive research on acidification and the effects on the environment. This was mainly due to
reports from Germany regarding serious damage to domestic forests. In 1984 the report concerning the problem of acidification (Notitie inzake de problematiek van de verzuring) was published. Following this report an extensive research program on acidification was set up (Additioneel Programma Verzuringsonderzoek) that would last till 1994. The interim outcomes of this extensive research formed the basis for the acidification policy of the Dutch government. The policy is formulated in the Acidification Abatement Plan (Bestrijdingsplan Verzuring, 1988-1989) and the National Environmental Policy Plans (NEPPs).

Goals
The first National Environmental Policy Plan (NEPP1, 1989) includes objectives in order to combat the acidification problem. The objectives are formulated in terms of deposition levels to be reached in the coming years by the different sector/industries that contribute to the problem (see also page 8). Six months after the NEPP, the NEPP-Plus was published: the objectives regarding the acidification problem are sharpened (also based on commitments made by the industry, in particular the power generators!). The overall objective is to reach a maximum deposition level of 2400 acid equivalents (including sulphur dioxide, nitrogen oxide and ammonia) in the year 2000 (65% reduction in deposition compared to deposition in 1985), and a maximum deposition level of 1400 acid equivalents in the year 2010 (80% reduction in deposition compared to 1985). To reach these objectives, the emissions of acidifying substances of various industries in the Netherlands but also emissions abroad (because these are imported in the Netherlands) should decrease significantly. For the power generation industry in the Netherlands the following targets are set in the NEPP-Plus:

- Sulphur dioxide: maximum of 18 kiloton emission per year in the year 2000 (the SO2 emissions in 1985 were 65 kiloton)
- Nitrogen Oxide: maximum of 30 kiloton emission per year in the year 2000 (the NOx emission in 1985 were 82 kiloton)

These objectives re-appeared in the national environmental policy plans that followed, NEPP-2 (1993) and NEPP-3 (1998).

Policy Instruments
Since April 1987, the emissions of the power generating industry in the Netherlands are regulated via the Decree Emission Requirements Combustion Installations (Besluit emissie-eisen stookinstallaties, BEES).

BEES- A (1987) focuses on large installations for which the provinces act as the responsible authorities (grant the permit). BEES-B (1990) focuses on installations in companies; here the local authority grants the permit. Both Decrees involve emission requirements for SO2, NOx of
combustion installations. Requirements differ for various types of combustion plants (gas, coal, etc.) and also differ for existing or new plants; small or larger installations. BEES leaves it up to the sector to choose the best technology to meet the requirements. BEES implements the EU directive on large combustion plants (88/609/EEG) of 24 November 1988 (see next section).

BEES-A is especially relevant for the power generating industry and it provides the legal framework for the Dutch government for combating SO2 and NOx emissions coming from electricity generation. The emission requirements in BEES have been sharpened a few times over the years also in order to comply with the EU directive.

Besides regulation, a more voluntary approach was followed in 1990 when a covenant was signed between the power generation industry and the Dutch government (the national government and the provincial authorities). The covenant includes targets for reducing the emissions of sulphurdioxide and nitrogenoxides by the power generation industry and covers the period from 1990 till 2000. These targets correspond with the targets laid down in the NEPP-plus. The covenant gives the sector the freedom to determine the most cost-effective way/set of measures to reach the targets.

In the Netherlands the covenant – or negotaited agreement – is used in combination with the permitting system included in regulation (see section 1). Also in this case, the covenant is combined with the permitsystem included in the Decree Emission Requirements Combustion Installations (BEES). In practice this means that the permitsystem will be maintained, and will take the agreements laid down in the covenant into account. This happens in two ways: (1) After signing of the covenant, the regulation, BEES, was revised in accordance with this agreement. For example, in the covenant was agreed that existing plants will not be confronted with more strict emission requirements and that for new plants stricter emission requirements will be in place. This has been included in the regulation. (2) The covenant committed the sector to make up a Plan of Action that explains how the sector is planning to reach the targets. The Plan of Action includes an overview of measures to be taken at the individual plants. These measures will be part of th epermit requests of the plants and this way the measures can be included in the permit given by the Province.

**Results**

The results of the overall acidification policy vary: The NEPP-2 (1993) states that the total acid deposition target of 2400 total acid equivalents/ha for the year 2000 and 1400 by the year 2010 will not be achieved with the current policy. Indications are that the total acid deposition in the year 2000 will reach 2600 acid equivalents. The foreign countries play an important role in this setback (NEPP-2, 1993, p 77). Also, in the years that follow, data show that the targets set for
2000 and 2010 will not be achieved with current policy. The main bottle-necks are the emissions of nitrogen oxides (traffic) and ammonia (agriculture). The emissions of sulphur dioxide have been reduced significantly and are in line with the policy objectives. In the NEPP-3 (1998) the Dutch government decides to continue implementing the policy that was set out in earlier plans; to postpone the targets set for NOx and NH3 emission reductions to 2005; and to assess -by the end of the period covered by the NEPP-3 - the feasibility of the total deposition objectives.

The power generation industry makes good progress with reducing its SO2 and NOx emissions. 1 The SO2 emissions of the sector in 1994 were 17.8 kton which is already below the 18 kton target for the year 2000. The NOx emissions were 53.4 kton and this is in line with the target which was set at 55 kton for 1994. SO2 emissions in 1997 by the sector were 12.4 kton; NOx emissions in 1997 were 35.2 kton (source: progress report SEP, November 1998).

**Outlook**
Till the end of the plan period (2002), the policy will be maintained which means regulation via the Decree Emission Requirements Combustion Installations (BEES) and implementation of the agreements laid down in the covenant of 1990.

It is not clear yet how the future will look beyond 2000/2002. The Dutch government aims to set new sharpened targets for SO2 and NOx emission reductions for the sector for the year 2010. For the sector, however, the future is not clear in more aspects since the electricity market is liberalising. This changes the context for discussions about reducing SO2 and NOx emissions. The discussion focuses on NOx: a new approach is tried out by the government: the idea is that extensive investments need to be made in order to reduce NOx emissions. Cost-efficiency is important in realising these reductions. Therefore the government chooses for the option of cost settlement (in Dutch: kostenverevening): one NOx target is set for the refineries, industry and energy companies. They can decide where its most cost efficient to realise the emission reduction. The discussions are still taking place, an agreement is expected to be ready by the end of this year (1999).

5. **European Policy**
International measures have been taken in the framework of the European Union and the Economic Commission for Europe of the United Nations (ECE). In this last context, several

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1 In 1995, Minister de Boer (minister of VROM) reports to the parliament that the implementation of the covenant with the electricity sector progresses according to the agreement: the SO2 and NOx emission reductions will be reached in time (Milieu Management, January 1995, number 1, p. 7)
countries have signed an SO2/NOx protocol (Helsinki, 1985, Sofia 1988). The commitment laid down in the protocol is to reduce the SO2 emissions of 30% in 1993 relative to 1980, and to create a standstill of emissions of NOx in 1994 relative to 1987. A new SO2 protocol was signed in spring 1994 in Oslo and heads for reductions of 60% of the gap between actual (i.e. 1990) emissions and critical loads (deposition targets) in 2000, but for several countries exemptions and longer lead times are provided (Liefferink, 1995, p. 71).

The third action program of the European Commission (1983) mentions the issue of acidification for the first time. This was mainly due to German pressure where the problem of forest die-back due to acid rain was high on the agenda. In the spring of 1983 an official proposal for a framework directive on air pollution was issued, followed later that year by the draft of a daughter directive setting limits for the emission of sulphur and nitrogen oxides from large combustion plants. In November 1983, the Commission disclosed its integral view on the issue of acidification in a Communication to the Council (COM(83)721). In addition to the drafts just mentioned, a considerable reduction of car emissions formed part of that approach. Proposals to this end were published in 1983. Controversies about the issues of the ‘clean car’ and the large combustion plants dominated the Communities air pollution policy till the end of this decade. The Large Combustion Plants Directive was eventually adopted in 1988, and the car emission standards in 1991! (Liefferink, 1995)

The Large Combustion Plants Directive contains the European policy towards the power generation industry and gives for each country, reduction percentages for limiting the emission of SO2 and NOx coming from combustion plants (from electricity producers) built before July 1, 1987. Two phases have been distinguished for NOx (1993 and 1998) and three for SO2 (1993, 1998, and 2003). For combustion plants that were built after July 1987, specific emission requirements have been defined. The Dutch emission requirements (laid down in BEES) are to some extent sharper than laid down in this directive (Thema document Verzuring, 1998, p. 65)

III The Process

6. Negotiations on a covenant concerning the reduction of SO2 and NOx emissions

The Dutch government approached the sector in order to find a way of achieving maximum levels of the acidifying substances, SO2 and NOx which was needed in the context of the overall acidification policy. In June 1990, the SEP signed a covenant with the government wit the aim to
lower the emissions of SO2 and NOx. Besides SEP, the minister of Public Housing, Planning and the Environment (ministry of Environment, and the 12 provinces signed the agreement. The period covered is ten years, 1990-2000.

The negotiations started in the beginning of 1989. Discussions between the power generation sector and the government regarding SO2 emission reduction however started already in the seventies. SEP always had been interested to agree on a ‘bubble’ or an overall emission ceiling for the sector so that they were not confronted anymore with arbitrary decisions of provincial authorities. Because of an overall trend of decentralisation, these discussions never led to an agreement on an emission ceiling for the whole sector.

In 1987 the Decree Emission Requirements Combustion Installations (BEES) was announced regulating the emissions of the power generation industry in the Netherlands. BEES provided the legal framework for combating the SO2 and NOx emissions coming from electricity generation.

In 1989 representatives of the ministry of Environment, SEP and the provinces (represented by their association IPO) started discussions on a ceiling for SO2 and NOx emissions for the whole power generation sector. Text proposals of the covenant were discussed in meetings (February and March 1989) between representatives of SEP, ministry of Environment and IPO. The ministry chaired these meetings. The discussions focused on elements of the covenant:
- The ministry of Environment and IPO wish to include a target for SO2/NOx emission in the year 1994. Initially SEP opposed to this.
- SEP would like to have a representative of the ministry of Economic Affairs (EZ) in the covenants commission. VROM and IPO did not agree.
- SEP objected to the arrangement that the covenants commission could terminate the covenant in case the agreements can not result in the emission reduction for 2000.

However, most import difference of opinion between SEP and IPO/Ministry of Environment was on the emission reduction targets of SO2 and NOx to be set for the year 2000. In the discussions IPO and VROM stucked to the targets of a maximum of 25 million kg SO2 emission in the year 2000 and a maximum of 30 million kg NOx emission in the year 2000 (these numbers are usually referred to as 25/30 SO2/NOx). SEP held to targets of 30 million kg SO2 emission in 2000 and 40 million kg emission in 2000. The Dutch government based its numbers on two policy documents that were in preparation during that period, namely the Acidification Abatement Plan (in Dutch: Bestrijdingsplan Verzuring) and the first National Environmental Policy Plan (NEPP). The negotiations for the covenant were not completed when the NEPP was published. The NEPP included a maximum of 30/40 SO2/NOx for 2000. However, based on insights gathered during the preparation of the Acidification Abatement Plan the Dutch government was convinced that the
25/30 targets for SO2/NOx were realistic. SEP argued that these stricter targets did not leave enough room to implement the emission reductions in a cost effective manner. In a meeting on June 29, 1989 this difference in opinion regarding the targets for SO2 and NOx emission reduction resulted in the termination of the discussions: SEP withdraw itself from the negotiations.

Now, the government started to prepare the revisement of the existing regulation for SO2 and NOx emissions by the power generation industry, the Decree Emission Requirements Combustion Installations (in Dutch: Besluit Emissie Eisen Stookinstallaties, BEES): stricter emission requirements would be included for all installations.

The ministry stopped working on the regulation when in the beginning of 1990 (January 10) again a meeting is arranged between SEP, Ministry of Environment and IPO, this time at the request of SEP. Since their last meeting (June 29, 1989), a new Cabinet assumed office and the National Environmental Policy Plan has been revised to the NEPP-Plus: the acidification targets have been sharpened. According to an expert at SEP, SEP postponed the negotiations exactly for the reason that the Cabinet fell: "SEP could not do business with a government who lacked political legitimacy". In any case, SEP returned to the negotiation table. In this second round of discussions very soon a compromise was found between the negotiation partners. One agreed to the stricter emission targets (aimed for by the Dutch government) but allowed some flexibility for the sector in reaching those targets: A maximum of 18 kiloton SO2 emission in the year 2000 plus four and three kiloton in case of malfunctioning of the equipment and a maximum of 30 kiloton NOx emission in the year 2000 plus 5 kiloton for implementing co-generation and (in the next section this will be further explained). These targets correspond with the policy set out in the NEPP-plus.

The provinces had representatives in the negotiations who reported back to the Interprovincial Consultancy Organ (IPO). In the beginning of the process the position of the provinces was one of doubt: as the permitting authority for the electricity producers they were not convinced of the (environmental) benefits that the covenant would bring: whether the SO2 and NOx emission reductions agreed upon in the covenant would actually be larger than by implementing the regulation, BEES. At the same time they found it difficult to foresee the (technical) developments in the future and to make a sensible estimation of emissions. In addition, the provinces did not have a clear view at that time how the covenant would work in practice and what role the provinces would keep. And the instrument of a covenant was new to the provinces. During the

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discussions they learned how to negotiate. In the meetings the provinces and the ministry of Environment were on the same side and discussed their positions before going into the meetings with SEP. In the second round of discussions the provinces made a case for realising a regional diffusion of the emission reductions by the power generators. In a side letter going with the covenant this has been agreed by SEP.

The ministry of Economic Affairs (EZ) was not directly involved in the negotiations. This ministry is the responsible ministry for power generation and has certain tasks based on the Electricity Law of 1989. However, since the subject of discussion was the acidification problem, the ministry of Environment was the speaking partner. In fact, the ministry of Economic Affairs was at first not very pleased that SEP was talking to the ministry of Environment directly and that they were not (directly) involved. SEP saw advantages in the new (target group) approach of the ministry of Environment and was willing to negotiate with the ministry of Environment. The ministry of Economic Affairs got a (observation) position in the Covenants Commission.

In the end, the ministry of Environment and SEP were both very satisfied with the outcome of the negotiations. Respondents from both organisations consider it to be a win-win situation: The ministry of Environment had a commitment of the sector to achieve an significant reduction of SO2 and NOx emissions. SEP at the same time had the freedom to implement the agreement in the most cost-effective way since the focus was on aggregate levels (maximum emission levels for the whole sector, not for individual plants). The provinces were happy with the success of the negotiations in which they played a role but were more sceptic about the value added of the covenant compared to the regulation.

7. Contents of the Covenant

Commitments

The specific objectives for 2000 laid down in the covenant are a maximum of 18 million kg SO2 emission, and a maximum of 30 million kg of NOx emission. To be able to proceed with the co-generation of electricity, SEP is allowed to exceed the NOx ceiling with maximum 5 million kg per year (article 3). In case of the malfunctioning of the desulpharisation equipment in coal fired electricity plants, and the plant is within legal limits, the emission ceiling is raised by 4 million ton SO2. This corrected ceiling can be exceeded by 3 million ton once every three year (article 4).

SEP commits itself to develop a Plan of Action within 6 months after concluding the covenant (Article 7 of the covenant). This plan gives a detailed overview of how Sep intends to achieve the reduced emission levels. Sep could do this because of its special position within the sector (see section 5): it has co-ordinating tasks regarding production but also the cost pooling system!
The covenant states that the minister of VROM will take the agreement into account when developing further regulation on the matter (article 5). This is a reference to BEES which would be revised just after the agreement: existing plants would not be confronted with more strict emission requirements. For new plants stricter emission levels would be in place. And the provinces who are the licensing authority agreed to operate in line with the provisions of the covenant and the Plan of Action.

**Monitoring**
The covenant obliges SEP to write a progress report every two year. A commission is established with representation of the involved parties (Ministry of Environment, Provinces and SEP). The ministry of Economic Affairs gets a (observation) position in the Commission. The task of the commission is to guide the implementation process of the covenant, evaluate the progress reports and to serve as a discussion forum in case conflicts arise.

**Evaluation and Continuation**
The covenant commits the partners to make a new agreement on SO2 and NOx reduction when the contract comes to an end (article 22).

**Legal framework**
The legal framework is formed by the Air Pollution Law, in particular by the Decision on Emission Levels of Combustion Plants (BEES). BEES gives specific maximum emission levels allowed for combustion plants on which the provinces provide permits to the companies. After signing the agreement, BEES will be revised in concordance with the provisions of the agreement.
The covenant does not formulate individual emission requirements for the individual plants. The Plan of Action that SEP needed to make for implementing the covenant, however did specify the measures that were planned for individual installations in order to reduce the emissions. Accordingly, this has been translated into the individual permits for the plants.

8. **Implementing the covenant**
The implementation of the covenant by SEP proceeds very well. Within 6 months SEP presented its Plan of Action which was approved by the Commission. The basis of the Plan is cost effectiveness. SEP operated (and still operates) a counting program which includes all the combustion plants. This program is used to implement the cost pooling mechanism that involves production costs of all companies. This program was used to define the most cost effective measures. SEP started with a scenario - setting out the trend till 2000- in which no extra
measures were taken. This scenario gave insight into how many extra measures were needed to achieve the emission reductions. SEP asked the companies to propose projects for decreasing the emissions of SO2 and NOx. A selection was made by SEP after which the companies made more detailed costs estimates. This was an interactive process between the companies and SEP which was possible because of the openness in information exchange. In the end, some 70 measures were selected for implementation and included in the Plan of Action. The reason that SEP was able to develop the Plan of Action in the most cost effective way was the existence of the cost pooling mechanism.

The sector took three basic measures to reach the SO2 emission reductions:
1. The older coal-fired plants without desulpharisation were taken out of operation.
2. The other coal-fired plants have been equipped with fluegas desulpharisation installations. Moreover, the desulpharisation installations have improved, so that desulpharisation percentages are reached exceeding 90%.
3. Coal is used containing less sulphur.

(Themadocument verzuring 1998, p. 43)

To combat the NOx emissions, some of the old coal-fired plants have been replaced by gas-fired installations. Other measures include the installation of certain technologies such as the Selective Catalytic Reduction (SCR)/denox or High temperature NOx Reduction.

Costs
The environmental costs of the energy sector 1998-1997

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<tbody>
<tr>
<td>Acidification</td>
<td>61</td>
<td>346</td>
<td>558</td>
<td>630</td>
<td>623</td>
</tr>
</tbody>
</table>

Most of the environmental costs are made for reduction of the emission of acidifying substances from electricity producing companies. These costs made up 50% of the total environmental costs of the energy sector in 1997 and were 28% of the total costs made within the acidification policy (source: environmental balance sheet 1998, RIVM).
An expert at SEP estimates that the total costs of implementing the covenant are around 500 million DFL. He adds that without the covenant, it would have cost twice as much to achieve the same targets.

From 1990 on, SEP reported every two year to the Commission on the progress made in reducing SO2 and NOx emissions and provided an overview of further plans till the year 2000. According to all respondents (from SEP, ministry of Environment, and the province) these meetings were always very satisfying. Sometimes the Plan of Action had to be adapted because some techniques or technologies did not perform as expected. SEP had to introduce other measures in order to reduce the SO2 and NOx emissions. The most important means of SEP to fulfil the emission requirements were the closing down of coal-fired power plants that had no abatement equipment; equip other plants with fluegas desulpharisation installations (to reduce SO2 emissions) and/or SCR (to reduce NOx emissions). Also coal was used that contained less sulphur.

Within a few years, the reductions of SO2 emissions were achieved. However the sector was not prepared to open up the covenant and set new emission targets, as a respondent from the provinces explained. In the same context two issues came up and were discussed in the commission meetings: (1) SEP proposed to use coals that contain more sulphur; although coals with a lower percentage of sulphur were available they were too expensive according to SEP. SEP wanted to use the extra ‘emission space’ they had to use the less expensive coals. (2) The percentage of desulpharisation realised by the installations exceeded the 90% while the covenant required 85%. The companies wanted to run their installation at the 85% level since this would be cheaper. This point was brought into the meeting by the provinces who ran into this problem in their dealings with the companies. SEP agreed with VROM and the provinces that this was not a good practice.

The progress reports show the emission reductions in SO2 and NOx by the power generation sector:

Table 8: Emission of SO2 and NOx by the power generating industry (source: progress reports covenant, SEP)

<table>
<thead>
<tr>
<th>Emissions</th>
<th>SO2</th>
<th>NOx</th>
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<tbody>
<tr>
<td>1990</td>
<td>44 815</td>
<td>72 474</td>
</tr>
<tr>
<td>1991</td>
<td>34 551</td>
<td>68 207</td>
</tr>
<tr>
<td>1992</td>
<td>28 753</td>
<td>65 475</td>
</tr>
<tr>
<td>1993</td>
<td>22 080</td>
<td>58 543</td>
</tr>
<tr>
<td>Year</td>
<td>SO2 Emissions</td>
<td>NOx Emissions</td>
</tr>
<tr>
<td>------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>1994</td>
<td>17,846</td>
<td>53,426</td>
</tr>
<tr>
<td>1995</td>
<td>16,180</td>
<td>48,880</td>
</tr>
<tr>
<td>1996</td>
<td>18,693</td>
<td>42,630</td>
</tr>
<tr>
<td>1997</td>
<td>12,446</td>
<td>35,174</td>
</tr>
<tr>
<td>2000 (target)</td>
<td>18,000</td>
<td>30,000</td>
</tr>
</tbody>
</table>

**Follow up discussions**

A new round of discussions between SEP and the ministry of Environment has taken place to explore the ground for a new covenant setting targets beyond 2000. They agreed that -as long as there is no follow up covenant - the current agreement remains valid. A covenant nowadays will have to be negotiated with the separate electricity producing companies since SEP will cease to exist in its current form. However, as it looks now, a joint agreement including three sectors: the industry, refineries and the electricity producers on NOx emission reduction is more feasible. The basis for such an agreement is cost settlement. According to a respondent at the ministry of Environment, they hope to finalise the deal by the end of this year. The fact that the electricity market is changing - the liberalisation - makes the negotiations more difficult, but not impossible.

**IV Analysis of the case**

In this part of our report we will look for factors that can explain the performance of this case - the covenant on SO2 and NOx emission reduction by the power generating industry. First we will assess the performance of the covenant.

**9. The Performance of the covenant**

“Within the government, this covenant is seen as a success story” says an expert of the ministry of Environment. He refers to the targets on SO2 and NOx emission reduction that are included in the covenant. Sofar, the emission reductions are in line (or even ahaed) with the timeschedule. Our theoretical framework provides an extensive evaluation framework in which the success (or not) of a negotiated agreement is not only related to the question if the targets have been reached: performance, the dependent variable - here is made up of the following aspects that are linked to various stages in the policy process:

1. **Feasibility:** Is the covenant administratively, legally and politically feasible?
2. **Capability:** Is the covenant capable of achieving the policy objectives?
3. **Impact:** What are the environmental, economic and social impacts of the covenant?
4. Resource Development: Has the formulation/implementation and operation of the covenant enhanced the policy resource base (in terms of relationships, awareness or learning)

**Figure 2: The policy process and performance indicators**

![Policy Process Diagram]

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**Feasibility**

The negotiations resulted in a covenant and thus we can conclude that a covenant was feasible. The initiative to start the negotiations came from the Dutch government in the context of the overall acidification policy. The power generation industry, represented by SEP, was willing to negotiate with the government. It was very clear that the alternative for the covenant was that the emission reductions would be required via regulation! The ministry of Environment intended to sharpen the regulations that would mean that all combustion plants need extra equipment to reduce SO2 and NOx emissions. SEP foresaw enormous investments and wanted the freedom to achieve the targets in the most cost effective way possible. The ministry of Environment aimed for the commitment of the sector because they expected more success in reducing SO2 and NOx than requiring it via regulation. The third party in the negotiations, the provinces represented by the IPO, hesitated, but were convinced by the ministry of Environment of the benefits of this approach.

One can speak of a clear win-win situation since both parties had a clear interest to come to an agreement.

**Capability**
The covenant has proved to be very capable of achieving the set targets: a maximum amount of emission of SO2 and NOx by the electricity producers in the year 2000. In between targets have been set for 1994. The covenant includes a clear set of targets that can be easily monitored. Also, the commitments for each partner laid down in the covenant are clear and easy to control.

The covenant does not explicitly include a burden sharing mechanism since such a mechanism already exists in the sector: it is the responsibility of SEP to achieve the targets for the sector as total. Herein lies the main advantage and reason for SEP to sign the covenant in the first place: they have got the opportunity to achieve the targets in the most cost effective way. SEP was also very much in the position to do so: it had central co-ordination tasks regarding the generation of electricity by the four producers and the price setting. The covenant obliged SEP to develop a detailed Plan of Action within 6 months after concluding the agreement: the Plan of Action needed to include an overview of how the sector is going to achieve the targets, and an overview of the emission targets for each combustion plant!

As mentioned earlier, monitoring is one of the strong aspects of this covenant. Based on the Plan of Action, the producers knew exactly what their targets were: the covenant states that these targets are included in the permit that the provinces give to the producers. And each electricity producer needs to report every year to the province and SEP on the emission of SO2 and NOx. In addition, the covenant commits SEP to report every two year to the covenants commission that had been established especially to guide the implementation of the covenant.

In case problems or conflicts occur in the implementation, the covenant installs a commission to serve as a kind of discussion forum that ultimately can decide that the covenant is terminated. In more individual cases, the province which is the permitting authority for the combustion plants can decide to take measures in case the plant is not complying with the provisions of the covenant.

We can conclude that the covenant in theory is very capable of achieving the targets. In practice, this has also been the case. SEP co-ordinates the implementation of the covenant. It made a Plan of Action for the sector which was approved by the commission. Every two year a progress report is published.

**Impact**

The environmental impact or effectiveness of the covenant is the reduced SO2 and NOx emissions from the combustion plants. Earlier in this report we have seen that the SO2 - and NOx emissions have been reduced significantly.
To achieve the reductions in SO2 emission, the sector took the following measures:
1. Closure of coal-fired plants without abatement technology
2. New Coal-fired plants with abatement technology
3. Fuel-substitution
4. Changes in the type of coal used (the percentage of S in the Coal)
5. Improvement of the abatement equipment

To reduce NOx emissions, some of the old coal fired plants have been replaced by gas installations. And some plants installed denox installations.

The SO2 emission reductions were reached within a few years. A large part of the reductions were realised by the closure of old coal-fired plants without abatement technology. These plants were on the list to be closed because of their life-time and (BEES) regulation. The covenant might have speeded up this process a little. Furthermore, the sector made some improvements with the desulphurisation equipment over the years. At the same time however, the sector has started to use coals that contain more sulphur instead of less.\(^1\) It is a question to what extent the reductions of SO2 emissions by the power generating industry are due to the covenant? There is no easy answer. What would have happened if there hadn’t been a covenant and normal practice would have taken place complying with the BEES regulation? It seems that the effect of the covenant is clearly visible at a macro level where the reductions of SO2 and NOx emissions are guaranteed by the sector. At a micro level, however, sometimes higher emissions can occur.

The covenant offered SEP the opportunity to achieve the targets at sector level in the most cost-effective way. The covenant did not add anything to the emission requirements for individual power plants, only an aggregate emission ceiling was agreed upon. SEP used the existing cost pooling mechanism to implement the covenant. Although no financial assessment has been made regarding the costs that were involved in implementing the covenant, it can be assumed that implementation took place in an efficient manner.\(^2\)

*Resource development*

When the covenant was signed in 1990, it was not very clear what technical developments would occur. SEP has been experimenting with some new techniques and in that sense, the covenant has stimulated learning on technical options to reduce SO2 and NOx emissions by combustion plants in cost effective way. On the other hand, no new innovative technologies have been developed the last ten years. There was also no reason too since it was very clear in the

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\(^1\) Implementing 88/609/EEC in the Netherlands: A case study on environmental effectiveness, allocative efficiency, productive efficiency and administrative costs, Kris Lulofs, Enschede, May 1999

\(^2\) A financial overview of the costs made by the sector to implement the covenant was not available. Respondents at SEP estimated that the total costs were about 500 million dollar to reduce the emission levels of SO2 and NOx. They also estimated that if the same reductions would have to be achieved by regulation, costs would have increased by factor two.
beginning of the process that the sector would achieve the targets. Thus, the incentive was missing. The fluegas desulpharisation installations have improved over the years. The people working within the power generating companies are enthusiastic regarding the covenant. For the government, in many respects this covenant was a kind of pilot project to try out the instrument of negotiated agreement. In that sense, the covenant performed very well, getting everyone (business and regional and state authorities) involved enthusiastic about this way of working together and learn how to work together in a different relationship.

In terms of relationships, the covenant has been without doubt very rewarding. Relationships have been built and trust and respect between the partners has grown over the years. However, it is difficult to see what this will mean for the future since the electricity market is changing now from a monopolistic market to a market based on competition. For one, this means that prices will matter in the future. The electricity companies will operate as real businesses in an open and competitive market which surely will change their agenda. Prices and thus production costs will become very important. SEP will be dismantled as the co-ordinating organisation of production and will continue under the new name TenneT, as the national transmission organisation.

To conclude, we can say that the performance of the covenant has been well: the covenant was feasible because all partners saw an advantage in closing an agreement together; the covenant was capable since it included a clear set of targets, a burden sharing mechanism and monitoring system. Its effectiveness is good insofar the targets for SO2 and NOx emission reduction have been achieved. However, it is questionable to what extent the reductions can be ascribed to the efficacy of the covenant. It can be assumed that the agreement has been very efficient due to the cost pooling mechanism within the sector. Finally, the covenant developed its resourcebase mainly in terms of relationship building and learning about working in the setting of a covenant.

10. Explaining the Performance: the institutional context and characteristics of the covenant

Based on earlier work on covenants, the NEAPOL project team formulated four hypotheses which include relations between certain factors from the institutional context and the performance of the covenant. These factors- or the independent variables - are:

1. presence of an alternative instrument
2. tradition of trust, respect
3. the structure of the sector: homogeneous/heterogeneous
4. the distance to the consumer
In policy making in the Netherlands, you can certainly speak of a tradition of consensus seeking, joint problem solving and mutual respect. The Netherlands is well known for this approach all over the world. Policymakers have experience in working with the instrument of negotiated agreements. More specifically, the relationship between the Dutch government, in particular the ministry of Environment, and the power generators goes back to the seventies when the idea of one emission ceiling for the whole sector was discussed. Also, relations were built in the context of the making of the regulation, BEES (around 1985).

When the ministry of Environment approached the sector in 1989 to discuss a covenant on the emissions of SO2 and NOx, SEP was happy to respond to this invitation. Relationships between the provinces and the power generation companies existed longer resulting from the discussions on the permits given by the provinces.

For two partners at the table - the ministry of Environment and SEP - the possible advantages of signing a covenant were clear: the ministry created a commitment by the sector to achieve a significant reduction of SO2 and NOx emissions. SEP at the same time had the freedom to implement the agreement in the most cost-effective way since the focus was on aggregate levels. In addition, the ministry of Environment really wanted this approach to work and wanted a success to legitimise working with negotiated agreements as a policy instrument. The provinces on the other hand, remained reserved during the process because they were not convinced that a covenant was the best approach. This attitude can also be explained from the recognition that the provinces - being the permit-giving authority for the combustion plants - always have had a big influence on the standards that were set regarding SO2 and NOx emissions. The covenant would decrease this influence. Nevertheless the provinces were also willing to try the covenant approach. Between the discussion partners a sense of respect and trust existed; knowledge (technical) regarding the emissions of SO2 and NOx by the sector and possible solutions were present with all three actors. Conflicts during the negotiations were solved by looking for compromises and a certain degree of openness of discussion between the partners also made this possible.

**Conclusion:** In the negotiations before signing the covenant, there was an atmosphere of consensus seeking and joint problem solving. The starting point was a positive attitude of the
Discussion partners aiming to make the negotiations a success. An important factor for the success of the negotiations was the recognition of a win-win situation. The hypothesis is not rejected.

**Instrumental hypothesis:** The fact that the public policy makers show readiness to use alternative policy instruments, as a stick behind the door to deal with the environmental problems, in case the negotiated agreement fails, is a crucial positive factor for the performance of negotiated agreements.

Clearly, the stick was present, namely the Decree Emission Requirements Combustion plants (BEES). If the negotiations would fail to result in an agreement, the government would have revised BEES to include stricter emissions for SO2 and NOx. For NOx this meant that every plant needed an expensive SCR installation. The government also made this very clear during the negotiations. In fact, when SEP withdraw from the negotiations because of a conflict regarding the targets to be set for 2000 (maximum levels of SO2 and NOx emissions), the government started to prepare the revisement of BEES. Before the revisement was finalised, however SEP requested to re-open discussions about a covenant. This time, the negotiations resulted in a covenant.

**Conclusion:** The presence of a viable and credible alternative steering mechanism provided an incentive to the sector to take the negotiations seriously and to strive for a consensus when possible. The hypothesis is not rejected.

**Sectoral hypothesis:** The fact that the industry sector is homogeneous, has a small number of players is dominated by one or two players, or has a powerful industry association that can speak for all its members, is a crucial positive factor for the performance of negotiated agreements.

In 1990, the power generation industry sector was very homogeneous, had a small number of players (four large producers) and a powerful association (SEP). The electricity sector was rather special compared with other sectors: it was a very protected market, no competition, extra costs could easily be included in the prices consumers pay for electricity. SEP played a central role in the sector with co-ordinating tasks in electricity production and planning and price setting. In this setting, SEP could indeed speak for its members during the negotiations. Even more important, SEP had the capacity and authority to translate the covenant into specific actions of the companies to reduce the emissions.
The electricity sector is changing rapidly towards a more open, competitive market. This is due to the European legislation which requires a liberalisation of the market. This means that SEP will be dismantled as the co-ordinating organisation for production. With the current discussion on further reduction of NOx emissions, the ministry of Environment indeed already experiences that this development makes the discussions with the sector more difficult. For one, because now discussions take place with the individual companies around the table instead of talking to one partner, SEP representing the sector. But more importantly, the interests of the power generation companies differ dependent upon their position in the market.

Conclusion: The homogeneous nature of the power generation sector that made the various aspects of the agreement relevant to all members, and the dominant position of SEP in the sector that made it a negotiation partner with which the government could actually ‘talk business’ made the sector very ‘accessible’ for a negotiated agreement approach. Moreover, the fact that SEP was so powerful to co-ordinate and control the implementation of the covenant (via the cost pooling mechanism) played a crucial role in the performance (applicability and effectiveness and efficiency) of the covenant. The sectoral hypothesis is not rejected.

**Competition Hypothesis:** The fact that industries are close to the final markets, is a crucial factor for the performance of negotiated agreements, due to consumer pressure.

The idea behind this hypothesis is that image with consumers is important for industry which then can be an incentive for improving the performance. In this case the link between selling directly to consumers and being dependent on the industry’s image with these consumers is not obvious. Until recently the electricity market was non competitive and in addition consumer electricity demand is rather inelastic. Therefore, in 1990, image did not play a role for the electricity producing sector. In fact, the electricity market was not close to its consumers in the sense that it should be afraid to lose clients. This situation is changing now.

Conclusion: In this case, the competition hypothesis does not provide an explanation for the performance of the covenant.

V Conclusion

In 1990, one of the major contributors to the acidification problem in the Netherlands was the power generation industry. The Dutch government formulated an acidification policy in which targets for emission reduction were set for the relevant sectors, including the power generation...
sector. After one year of negotiations, the Dutch ministry of Environment, the provinces and SEP (representing the sector) signed a covenant on the reduction of emissions of sulphur dioxide and nitrogen oxides. Almost ten years later, the covenant has proven to be a success: the emission targets have been realised within the agreed timeframe.

The hypotheses, except for the last one - the competition hypothesis - all provide explanations for the performance of the covenant:

1. Trust, respect for each other positions in the negotiations and the recognition of a possible win-win situation (*policy hypothesis*);
2. The fact that regulation was a real alternative for the negotiated agreement gave an extra incentive to the negotiations (*instrumental hypothesis*).
3. For the government it was very easy to discuss and make agreements with the sector: SEP was a powerful association that was able to speak for its members during the negotiations. The role/position of the SEP and the structure of the sector and electricity market in the Netherlands during the nineties made it possible that the covenant was implemented successfully in a cost efficient way (*sectoral hypothesis*).

The presence of these factors provided a fruitful setting for negotiating and implementing the covenant. Important for the success of the covenant - the achievement of its emission reduction targets - has also been the contents of the covenant itself (which in itself is an outcome of the negotiation process and thus an aspect of performance, namely capability): the fact that the covenant included a clear set of targets, a timeschedule and provisions regarding monitoring and reporting.
Appendix I

Covenant concerning the combatting of SO₂ and NOₓ

Contents

I Definitions
Article 1: interpretation

II Objectives
Article 2: emission ceilings
Article 3: heat
Article 4: fault rules

III State Obligations
Article 5: rules

IV Sep Obligations
Par. 1 Obligation to endeavour
Article 6: measures
Par. 2 Plan of Action
Article 7: time of establishment and content
Article 8: adaptation and alteration
Par. 3 Execution of the Plan of Action
Article 9: responsibility
Article 10: individual electricity generation companies
Article 11: report

V Obligations of the Provinces
Article 12: exercise of the competence
Article 13: report

VI The Commission
Par. 1 Composition
Article 14: the Commission
Par. 2 Evaluating and altering the Plan of Action
Article 15: evaluation criteria
Article 16: deviation from the Plan of Action
Article 17: alteration of the Plan of Action

Par. 3 Advice
Article 18: granting advice

Par 4 Evaluating the report
Article 19: evaluation criteria

VII Amendment and termination
Article 20: amendment
Article 21: termination

VIII Miscellaneous
Article 22: evaluation and continuation
Article 23: environmental care

1 The State of the Netherlands, here represented by the Minister of Public Housing, Planning and Environmental Management

2 The public limited company (SEP) Co-operating Electricity Generation Companies N.V., here represented by N.G. Ketting (engineer) also acting on behalf of the individual electricity generating companies based upon the powers of attorney annexed to this covenant.

3 The Province of Groningen

4 The Province of Friesland

5 The Province of Drente

6 The Province of Overijssel
The Province of Gelderland

The Province of Flevoland

The Province of Utrecht

The Province of North Holland

The Province of South Holland

The Province of Zeeland

The Province of North Brabant

The Province of Limburg

All represented by Mr. C.J. Kover, chairman of the board of trustees of the Interprovincial management, empowered as appears from the powers of attorney annexed to this covenant.

Having duly considered:

- that the gravity of the problem of the increasing acidity as emerges from, _inter alia_, the Interim Evaluation Note on Acidity dated 23 December 1987 (lower house papers II, 1987/1988, 18 225, no. 22) and the Plan to Combat Acidity dated 20 July 1989 (lower house papers II, 1988/1989, 18 225, no. 31) compels far-reaching measures to combat the emission of acidifying matter, identified in both papers, so that in the long term an acceptable level, according to the papers, of acid deposit can be attained,

- that this acceptable level cannot be reached in the year 2000, but that measures can be taken to bring us close to the realisation of the objective is every target group and the rest of the world, identified in the above-mentioned papers, make their contribution,

- that since the entry into the Decision concerning the emission requirements for boilers Law concerning air pollution (Wet inzake de luchtverontreiniging, Stb. 1987, 164), the technical possibilities for limiting the emission of SO₂ and NOₓ have been improved,
that an amendment of the Decision concerning the emission requirements for boilers Law concerning air pollution shall be prepared in the interests of giving a more far-reaching limitation of the acidifying emissions a legal basis, that it is nevertheless otherwise desirable and possible in the short term to create clarity as to the contribution of one of the target groups to this more far-reaching limitation,

that the SEP and the individual electricity generation companies wish to make an important contribution to the necessary far-reaching fight against the emission of SO₂ and NOₓ and the individual electricity generation companies have declared their preparedness and ability to make a contribution,

that in particular, the SO₂ emissions from the electricity generation companies have reduced markedly since 1980 as a result of combat measures and the NOₓ emissions have in the same period virtually remained at the same levels,

that if electricity consumption develops as indicated in the Electricity Plan of 1989-1998, the execution of this plan shall lead to a further lowering of the SO₂ emissions and a lowering of the NOₓ emissions, while it is anticipated that the results of an extensive research programme, development and demonstration to be executed by the electricity generation companies shall lead to a further lowering of the NOₓ emissions,

that on the basis of the Note reconsidering the main features of energy policy (lower house papers II, 1988/1989, 21 061, no. 1) SEP has been granted the opportunity for the Electricity Plan 1990-2000 to construct new gas units alongside new coal units,

that indeed energy generation takes place throughout the entire country, but decisions concerning the application of fuels at means of generation and the application of these means are taken by the SEP,

that in the fight against acidity it is above all of importance to lower the total emission of acidifying components in the Netherlands,

that it therefore is suitable to make arrangements concerning the level of emissions of SO₂ and NOₓ that the collective electricity generating companies should abide by,

that in setting the emissions ceiling for SO₂ and NOₓ in the year 2000 at a level which is appreciably lower that the level that would be achieved were only the Decision
concerning the emission requirements for boilers Law concerning air pollution to be adhered to, the electricity generating companies are able to make an important contribution to the lowering of the emission of these materials in the Netherlands in the period to the year 2000,

- that setting these emission ceilings gives SEP the possibility to reduce emissions within the Decision concerning the emission requirements for boilers Law concerning air pollution in a more cost-effective manner than would be possible if the same emission requirements were to be introduced at the same time for categories of installations,

- that for the realisation of the objective outlined above it is necessary that the Parties involved make an arrangement,

- that given the 1989-1998 Electricity Plan, the Note reconsidering the main features of energy policy, the Interim Evaluation Note on Acidity and the Plan to Combat Acidity

Agree: I Definitions

Article 1: interpretation

In this covenant, the following definitions apply:

1. The State: the State of the Netherlands and those of its organs enjoying legislative or administrative powers
2. SEP: the public limited company, Co-operating Electricity Generation Companies N.V.
3. Electricity generation company: EPZ N.V., EPON N.V., EZH N.V. and UNA N.V.
4. The province: each of the provinces and those of their organs enjoying legislative of administrative powers
5. the Law: the law concerning air pollution (Wet inzake de luchtverontreiniging Stb. 1981, 411)
6. the Decision: the Decision concerning the emission requirements for boilers Law concerning air pollution (Stb. 1987, 164)
7. Licence: a license as understood in article 20, paragraph 1 of the Law.
II Objectives

Article 2: emission ceilings

The annual emission of sulphur dioxide (SO$_2$) and nitrogen oxide (NO$_x$) from the boilers of electricity generating companies in the Netherlands will be limited by the year 2000 at the latest to 18 million kg SO$_2$ and 30 million kg NO$_x$ annually.

Article 3: heat

For the reduction of nitrogen oxide, which will be realised after the conclusion of the covenant, as a consequence of the heat supplied by the SEP in the context of the execution of the SEP heat plan, on the basis of 1250 Mew the emission target for NO$_x$ laid down in article 2 will be increased by at least 5 million kg. If it is ultimately contemplated that a unit will only supply useful heat for a part, the target will only be raised proportionately.

Article 4: fault rules (modification scheme)

1. The SO$_2$ value laid down in article 2 will be increased by 4 million kg to offer scope for the emission of SO$_2$ from coal centers when the flue gas desulphurisation installations are disturbed and the station remains in operation in conformity with the law.

2. Where as a consequence of disturbances of flue gas desulphurisation installations the SO$_2$ emissions exceed the corrected ceiling level, SEP will be permitted to exceed the corrected ceiling at the most once every three years by 3 million kg.

III State Obligations

Article 5: rules

The Minister of Public Housing, Planning and Environmental Management shall, in the revision of the Decision concerning the emission requirements for boilers Law concerning air pollution announced in the Plan to combat acidity, which is required for the execution of that plan, take account of the arrangement made in the context of this covenant in the following manner:

1. For existing boilers belonging to an electricity generating company the emission levels shall not be tightened.
For boilers belonging to an electricity generating company, other than those mentioned under 1, the emission levels will be altered as follows.

a. coal-fired
   \[\text{SO}_2: 200 \text{ mg/m}^3, \text{ where the license was granted after 1-1-1990; }\]
   \[\text{NO}_x: 400 \text{ mg/m}^3, \text{ where the license was granted before 1-1-1989; }\]
   \[300 \text{ mg/m}^3, \text{ where the license was granted in 1989; }\]
   \[200 \text{ mg/m}^3, \text{ where the license was granted on or after 1-1-1990; }\]

b. oil-fire
   \[\text{SO}_2: 200 \text{ mg/m}^3; \]
   \[\text{NO}_x: \text{ the same requirements shall be set as for equivalent installations in the industry}\]

c. gas-fired or gas turbine installations
   \[\text{the same requirements shall be set as for equivalent installations in the industry}\]

IV SEP Obligations

Par. 1 Obligation to endeavour

Article 6: Measures

1. SEP and the electricity generation companies shall endeavour that the emission of \(\text{SO}_2\) and \(\text{NO}_x\), taking a reasonable degree of cost effectiveness in to account, shall be limited as far as possible by, \textit{inter alia},

   a. at boilers where desulphurisation as understood in article 11 second paragraph or article 15 second paragraph of the Decision is taking place, using low sulphur coal and optimising the output of the desulphurising,

   b. at boilers, for which a first license is granted after 1 January 1989 but before the signing of this contract, by taking such measures that at coal-fired boilers that as far as possible the levels approach the norm of 200 mg/m\(^3\), derived from flue gas with an oxygen level of 6%.

   c. at boilers for which a first license is granted after the signing of this covenant, to take such measures that
      - by coal-fire boilers a maximum of 200 mg per m\(^3\) \(\text{SO}_2\) and a maximum of 200 mg per m\(^3\) \(\text{NO}_x\) is reached, derived from flue gas with an oxygen level of 6%
-by gas-fired boilers to keep the levels as low as possible, but a maximum of 100 mg NOx per m³ will be reached, derived from a flue gas with an oxygen level of 6%, and
-by gas turbine installations a value will be reached of 65g/GJ, valid for normal dry flue gas.

2. SEP shall ensure that in 1994 the emissions of SO₂ do not exceed a maximum of 30 million kg and the emissions of NOx 55 million kg.

3. SEP shall as far as possible attempt to avoid disruptions in the provision of the flue gas de-sulphurisation.

4. SEP undertakes to equip a Polish electricity company to provide a coal-fired unite in Poland with a flue gas desulphurising appliance.

**Par. 2 Plan of Action**

**Article 7: time of establishment and content**

1. Within 6 months of the signing of this covenant, SEP will draw up a Plan of Action for carrying out the objectives for the period to the year 2000 mentioned in article 2, and shall submit it for examination by the Commission mentioned in article 14.

2. The Plan of Action contains:
   a. a report of the boilers mentioned in article 2 to which this covenant is applicable.
   b. for each boiler for which measures are provided, in the interests of the execution of that laid down in article 15, the necessary information concerning the operative SO₂ and NOx emissions standards pursuant to the Decision and – where they are stricter – also the demands imposed by the current license.
   c. for the remaining boilers, the total annual emissions level,
   d. a summary of the phasing-in of the reduction of emissions, the current measures to combat the emission of SO₂ and NOx with the time scales for the anticipated introduction and the accompanying anticipated levels of emission. In the choice of means of reducing the emissions, a balanced regional division shall be aimed at.
   e. for each boiler for which one or more definitive measures have been laid down, the resulting emission levels being the values which shall be observed taking into account the applicable provisions concerning measurement, and the annual average anticipated values including emissions during periods of disruption.
Article 8: adaptation and alteration

1 When the technical problems as understood in article 11 second paragraph, of such a nature that reasonable/grounded doubt exists at the SEP whether the emission ceilings, mentioned in article 2, can be met, it shall adjust the Plan of Action.

2 For reasons of cost efficiency, SEP may alter the Plan of Action when it is of the opinion that new technical possibilities given it cause to do so.

Par. 3 Execution of the Plan of Action

Article 9: responsibility

SEP is responsible for the realisation of the emission targets mentioned in article 2 and for the execution of the Plan of Action.

Article 10: individual electricity generation companies

1 The electricity generation companies shall include SO$_2$ and NO$_x$ values, which according to article 7 paragraph e constitute part of the Plan of Action, in a communication as understood in article 17 of the License Decision for the Air Pollution Institutions (Vergunningsbesluit inrichting luchtverontreiniging), either in a request for a license or in a request for the alteration of a license.

2 Every electricity generating company shall prior to 1 March each year report to SEP and the College of County Aldermen (College van Gedeputeerde Staten) which granted its license, about compliance with the norms contained in the Decision, and the License prescriptions relating to the emission of SO$_2$ and NO$_x$, as well as the actual emission SO$_2$ and NO$_x$ from its boilers, given that which is contained in the Plan of Action understood in article 7 concerning this oven.

3 Where the emissions from an boiler are continually monitored, SEP encourages that the individual masses of the daily emissions are set on the basis of the calculated output of flue gasses and shall be added to the quantities emitted in the preceding days of the calendar year.

4 Where the daily emissions from an boiler are not monitored daily, SEP encourages that the mass of the SO$_2$ and NO$_x$ emitted in a calendar year is calculated.
Article 11: report

1. Every even year, SEP presents a report to the Commission mentioned in article 14 on the execution of the covenant, the Plan of Action and the plans for combatting emissions of SO₂ and NOₓ in the remaining period to the year 2000.

2. If in the report period technical problems have arisen, SEP shall mention these in its report.

V Obligations of the provinces

Article 12: exercises of competence

1. The province shall exercise its powers in relation to the fixing of emission norms for SO₂ and NOₓ in conformity with the provisions of this covenant and the Plan of Action.

2. The province is not bound by the provisions contained in paragraph 1 where:
   a. an electricity generation company fails to execute that provided in article 10;
   b. it is necessary to take into account air quality demands, on the basis of article 2 of the Law, which have been set with other aims in mind than combatting acidity
      In these case, the province can set an ceiling for a boiler.

Article 13: report

The province sends a copy of the report mentioned in article 10 paragraph 2 to the regional inspector.

VI The Commission

Par. 1 Composition

Article 14: The Commission

1. There is a Commission, composed of six members, two of whom are appointed by the Minister of Public Housing, Planning and Environmental Management, two by the SEP and two by the provinces.
The Minister of Public Housing, Planning and Environmental Management shall appoint the chairman.

2 The Minister of Economic Affairs can send an observer to the meetings of the Commission

Par. 2 Evaluating and altering the Plan of Action

Article 15: evaluation criteria

The Commission approves the Plan of Action if it is not in conflict with the emission ceilings set in article 2, the obligations enumerated in article 6, the Decision or the prescriptions concerning emission of SO$_2$ and NO$_x$, which are contained in licenses granted under the Law.

Article 16: deviation from the Plan of Action

1 Where the Commission reaches the opinion that the Plan of Action in conflict with one or more of the criteria mentioned in article 15, it shall inform SEP of this and of the reasons which lead to this conclusion.

2 If SEP agrees with the opinion of the Commission, it shall adjust the Plan of Action and submit it once again for the Commission’s approval.

3 If SEP rejects the Commission’s opinion, after the Commission has informed the Parties of its findings, it shall consult with other Parties to provide for the situation which has arisen.

Article 17: alteration of the Plan of Action

Articles 15 and 16 are correspondingly applicable where the Plan of Action is changed after the Commission has approved the Plan of Action.

Par. 3 Advice

Article 18: Granting advice

1. The Commission can advise about all which, pursuant to the execution of the covenant, can be included in an application for or amendment of a license or in a statement in relation to the emission of SO$_2$ and NO$_x$. 
2. The Commission can deliver advice to the province concerning that which, pursuant to the execution of this covenant, can be included in license provisions concerning emission of SO$_2$ and NO$_x$.

**Par. 4 Evaluating the report**

**Article 19: Evaluation criteria**

The Commission evaluates the report mentioned in article 11 on the basis of the Plan of Action. It checks whether the execution of the measures is going according to the plan and if the attainment of the objectives laid in article 2 is reasonably possible.

**VII Amendment and termination**

**Article 20: amendment**

1. Where unexpected, substantial environmental developments take place caused by the emission of SO$_2$ and NO$_x$ the Parties shall consult to assess to what extent the covenant is need of adjustment.

2. In that consultation, the technical developments which have occurred will also be taken into consideration.

3. The ceilings mentioned in article 2 shall be altered where the import or demand for electricity for which the SEP and the electricity generation companies must provide, diverges substantially from the planning in the 1989-1998 Electricity Plan. The alteration shall take place on the basis of the level of technology at that moment and the choice of fuel input.

**Article 21: termination**

Where the consultation mentioned in article 16 paragraph 3 or the consultation mentioned in article 20 paragraphs 1 and 3 does not lead to agreement, or where it emerges from a report mentioned in article 11 that it seems likely that the emission levels shall not be met, the Parties can terminate the covenant.

**VIII Miscellaneous**
**Article 22: evaluation and continuation**

1. The Parties agree to evaluate the execution of this covenant in 1994 and 1998.
2. The Parties agree that after the evaluations of 1994 and 1998, arrangements shall be made concerning measures to reduce SO$_2$ and NO$_x$ emissions after the year 2000 by supplementing or altering this covenant. In so doing, account will be taken of the (scientific) developments concerning knowledge about the causes of acidity and the techniques to fight it, the contributions made to the reduction of acidifying emissions made by other target groups in the Netherlands and the reduction of emissions achieved abroad.

**Article 23: environmental care**

1. SEP is prepared to set up environmental care systems with the individual electricity generators, which safeguard good environmental management by the electricity generation companies, including the compliance with provisions to protect the environment laid down by or by virtue of the law, and the reporting of it.
2. The description of the environmental care system for SO$_2$ and NO$_x$ shall be annexed to the Plan of Action as understood in article 7.
3. The system shall be extended to other environmental matters as soon as possible.

Agreed and signed in triplicate in the The Hague on Tuesday, 12 June 1990.

Ir. N.G. Ketting     C.J. Korver     J.G.M. Alders
References

Interviews have been held with:

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