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COMMITTEE PRINT

A STUDY OF THE RELATIONSHIPS BETWEEN THE GOVERNMENT AND THE PETROLEUM INDUSTRY IN SELECTED FOREIGN COUNTRIES

THE NETHERLANDS

PREPARED BY THE

CONGRESSIONAL RESEARCH SERVICE

AT THE REQUEST OF

HENRY M. JACKSON, Chairman

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

UNITED STATES SENATE

PURSUANT TO

S. Res. 45

THE NATIONAL FUELS AND ENERGY POLICY STUDY

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SENATE RESOLUTION 45

National Fuels and Energy Policy Study

This publication is printed for the use of Senators participating in the National Fuels and Energy Policy Study, authorized by Senate Resolution 45 of the 92d Congress.

S. Res. 45, introduced by Senators Jennings Randolph and Henry M. Jackson, was amended and agreed to by the Senate on May 3, 1971. The resolution authorized the Senate Committee on Interior and Insular Affairs and ex officio members of the Committees on Commerce and Public Works and the Joint Committee on Atomic Energy to make a comprehensive study of programs and policies required to meet national energy needs.

Subsequently, the Senate approved the addition of ex officio members from the Committees on Aeronautical and Space Sciences, on Finance, on Foreign Relations, on Government Operations and on Labor and Public Welfare.

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MEMORANDUM OF THE CHAIRMAN

To Members and Ex Officio Members of the National Fuels and Energy Policy Study (S. Res. 45, 92d Congress), Committee on Interior and Insular Affairs:

The advent of the energy crisis has brought a vastly expanded Federal role in energy policy. The creation of the Federal Energy Administration and the Energy Research and Development Administration by the 93rd Congress symbolize this fact. The close relationship between energy, economic and foreign policy and the predominant Federal ownership of energy resources are among the factors which assure a greater Federal role in energy matters in the future.

As a new Federal role emerges it is inevitable that the traditional role of private industry must also change in response to new requirements and objectives of national energy policy. Dissatisfaction with the past performance of both industry and government in meeting national energy needs has led to a number of proposals that would change the relationship between public and private sectors on energy matters. These include Federal chartering of energy corporations and the creation of a Federal Oil and Gas Corporation to develop Federally-owned energy resources.

As Congress considers these and other proposals, it should be useful to consider the experience of other countries. With this in mind, the Congressional Research Service of the Library of Congress was asked to examine the relationships between government and the petroleum industry in selected foreign countries. In each case, these studies will attempt to describe the extent to which government has assumed traditional industry functions; the degree of regulation when such functions are still performed by the industry; the institutional mechanisms used by government to regulate or control industry operations and the statutory basis for government action.

I have directed that the third study in the series, dealing with the Netherlands, be published as a committee print for the use of Senators participating in the National Fuels and Energy Policy Study. The study, completed March 10, 1975, was prepared by Edward Lampson, Analyst in European Affairs of the Congressional Research Service.

HENRY M. JACKSON, *Chairman.*

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PREFACE

This study on the Netherlands is the third in a projected series of country monographs intended to provide a brief narrative account of the relationships between Government and the petroleum industry in several industrialized oil consuming countries.

While there are, of course, wide variations in the practices and experiences of the various countries, each study will cover the following general topics:

Overall energy position.—As the framework for the more specific relationships with the petroleum industry, there is a brief summary of the country's energy posture, including a description of overall energy policy, energy use patterns, and the degree of dependence on petroleum, particularly on imports.

General industry-Government relationships.—The extent to which the government has assumed traditional industry functions is briefly described, including nationalization and/or special government-industry relationships to the energy industries or to some of the energy industries.

Government relationships with the petroleum industry by sector.—With adjustments to allow for adaptation of each country's individual patterns, the relationships are described in terms of policies and practices applied at each of the steps in the oil development process: Exploration; the production of crude oil; its transportation, both within country and importing arrangements; refining; marketing; and export-import policies.

As appropriate to each activity, the measures described may include regulations, tax policies, price controls, ownership or other forms of Government participation, and normal stockpiling practices. Where there are special legislative or other innovations that seem to provide interesting illustrative precedent for the United States, these may be described at somewhat greater length.

While every attempt is made to provide as up-to-date information as possible, the studies are not intended to cover recent developments in joint consumer country planning for emergency pooling of supplies, emergency stockpiling or financial balance of payments burden sharing arrangements. The focus is intended to be on those aspects of foreign country experience which might prove useful in examining our own longer-term national policies vis-a-vis domestic oil production and domestic petroleum needs.

Similarly, although environmental policies and practices clearly are affected by problems of pollution from petroleum in many forms at many levels of activities in the production cycle, none of the studies will attempt to cover this aspect of government policy in so brief a review.

The Appendix includes a summary of the Paper on Energy Policy by Dutch Minister of Economic Affairs R. F. M. Lubbers.

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THE NETHERLANDS AND PETROLEUM—GOVERNMENT-INDUSTRY RELATIONS

By Edward Lampson, Analyst in European Affairs, Library of Congress

I. Introduction

The characteristics of the petroleum industry in the Netherlands and the relationship of the industry to the Dutch Government have been influenced by three special features.

The position of the largest Dutch port—Rotterdam—at the mouth of the Rhine has made it a leading distribution point for the overseas commerce of Northern Europe. One consequence of this position is that the port has become the largest oil refinery center on the European continent.[1]

The presence of the headquarters of one of the seven major international oil companies—Royal Dutch-Shell—in The Hague involves the Netherlands in international oil affairs on a scale which is unusual for a country of its size with an area of only 14,125 square miles and a population of about 13 million. Although the Dutch Government does not participate in the operations or management of Royal Dutch-Shell in any way, the company provides a reservoir of talent in petroleum matters upon which the Government can draw for advice and assistance.

The discovery of the largest natural gas field in Europe beneath Dutch soil in 1959 has made the Netherlands a net exporter of energy and a pioneer in the exploration work in the North Sea, which has opened up vast oil and natural gas reserves to Northern Europe. The country is now Western Europe's largest natural gas producer and exporter.[2]

II. Overall Energy Position

Until recently, the Netherlands has relied primarily on oil to meet its overall energy needs. In 1970, 61 percent of domestic energy consumption was in the form of oil, 29 percent was met by natural gas and 10 percent was met with coal.[3] By 1973, however, the share of natural gas had grown to 50 percent of domestic energy needs, and the country was engaged in a $550 million program to switch even more fully from oil to natural gas, with the goal of meeting 60 percent of domestic needs with natural gas by the end of 1974.[4]

Netherlands is in the interesting position of being a country which with only minimal supplies of indigenous oil—about 2 million tons produced in 1970—is nonetheless a major exporter of petroleum

[1] International Petroleum Encyclopedia. Tulsa, Okla., The Petroleum Publishing Co., 1974, p. 18.
[2] Ibid., p. 20.
[3] OECD Oil Committee. The Present and Future Prospects. Paris, Organization for Economic Co-operation and Development, 1973, p. 227.
[4] International Petroleum Encyclopedia, op. cit., p. 22.

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products. Of the 60 million tons of crude petroleum imported in 1970, 33 million tons were exported as oil products processed in the country's impressive refineries.[5]

In 1970, seventy-seven percent of such imports came from Arab oil-producing countries, chiefly Libya and Kuwait.[6]

In 1973–74 Arab oil exporters placed an embargo on shipments to the Netherlands, claiming that the Dutch Government had taken a pro-Israeli stand at the time of the Israeli-Arab October War. (The Arab action may have been partly motivated by a desire to make an example of one of the smaller European countries in order to intimidate the major countries of Europe.) In fact the Netherlands suffered no real hardship as a result of the embargo. Reportedly its basic needs were met by adjustments in the delivery patterns of the major private international oil companies which shifted the main sources for the Netherlands from the Arab oil states to Iran and Nigeria.[7]

As noted above, the Dutch have indigenous sources of natural gas in Holland and the North Sea. Dutch production has been increasing rapidly, from 3.3 billion cubic meters in 1966 to 33.1 billion in 1970, and 69.7 billion in 1973. Home consumption of natural gas in 1970 included some 5 billion cubic meters for supplying public utility power stations, and roughly half of the remainder of the 16.1 billion cubic meters went to households and similar users and the other half to industry. The share of natural gas in total Dutch energy consumption has been rising sharply in recent years. In 1966 it was approximately 8 percent of the total.[8] As noted above, by 1973 the share had increased to 50 percent.[9]

The resources of the Dutch natural gas fields are so extensive that the country can not only meet its own needs but has also become a major exporter of natural gas to its neighbors. In 1970 sales to Germany, Belgium, and France amounted to 4 billion cubic meters, 4.9 billion cubic meters, and 3.2 billion cubic meters. Recently the Dutch Government has become concerned about the possible exhaustion of Dutch natural gas reserves by the end of the century.

The situation of the Netherlands as of 1970 in regard to petroleum and natural gas is set forth statistically in the tables given on the next page.

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[5] OECD Oil Committee, op. cit., p. 227.
[6] Ibid., p. 276–277.
[7] American Embassy, The Hague, Airgram A–117, June 25, 1974.
[8] OECD Oil Committee Report, op. cit., p. 229.
[9] Figure Supplied by the Dutch Embassy.

THE NETHERLANDS [1]

[Principal oil statistics]

	1966	1967	1968	1969	1970
Crude and process oils:					
Indigenous production	2.4	2.3	2.1	2.0	1.9
Imports	31.7	33.8	38.2	50.8	60.1
Total supply	34.1	36.1	40.3	52.8	62.0
Refinery intake	34.0	35.2	39.6	51.9	62.2
Exports			.1	.5	
Total disposals	34.0	35.2	39.7	52.4	62.2
Petroleum products:					
Refinery output	31.6	32.9	36.5	48.6	58.5
Output from other sources					
Imports	11.1	9.4	7.9	6.2	9.6
Total supply	42.7	42.3	44.4	54.8	68.1
Deliveries to inland consumption	19.0	19.9	20.8	21.8	24.0
Bunkers	5.0	5.2	6.6	8.2	8.8
E ports	71.9	17.3	16.5	24.6	33.7
Total disposals	41.9	42.4	43.9	54.6	66.5
Refinery capacity: Crude distillation capacity at end year	32.2	37.8	42.2	67.2	68.5

[1] OECD Oil Committee report, op. cit., p. 227.

PRINCIPAL NATURAL GAS STATISTICS [1]

[Billion [2] cubic meters at 15° C and 760 mm Hg.]

	1966	1967	1968	1969	1970
Indigenous production [3]	3.3	7.2	14.6	23.1	33.1
Imports					
Total supply	3.3	7.2	14.6	23.1	33.1
Inland consumption	3.2	6.0	10.0	15.1	21.1
Exports	.1	1.2	4.6	8.0	12.0
Total disposals	3.3	7.2	14.6	23.1	33.1

[1] OECD Oil Committee Report, op. cit., p. 227.
[2] Billion as used in this report is 10^9.
[3] Excluding waste and flared gas, processing plant fuel, losses and return to formation.

III. Industry-Government Relationships: General

A. GENERAL CHARACTER

The Dutch economy is a free enterprise system. With the exception of major transportation lines, coal mining and chemicals, natural gas production and supply, and electricity, which is government managed on the provincial and municipal levels, the Dutch Government does not manage any Dutch business concerns nor is it a major stockholder in any Dutch company.

However, partly owing to the size of the country, the density of the population, and the importance to the Dutch national wellbeing of such programs as flood control and environmental protection, there is a strong tradition of state planning both in macroeconomic terms and in terms of specific objectives. As a member of the Common Market, the Netherlands is subject to directives from Brussels, especially in the fields of agriculture and trading arrangements.

Recently the Dutch Government has been more active in influencing developments in the energy field. The Ministry of Economic Affairs is planning to increase the scale of Government participation in the exploration and production of petroleum and natural gas and to exert government influence on prices and consumption patterns by means of price controls, taxes, and subsidies, if necessary. A Government spokesman has outlined the basic assumption of Dutch energy policy as follows:

> The basic assumption is that energy sources can and must be interchangeable and that energy policy as such must be integrated with socio-economic policy and attuned to other elements of government policy including those concerning the environment. International contexts must play a part.[10]

B. INDUSTRY-GOVERNMENT RELATIONSHIP IN THE FIELD OF ENERGY

The Dutch Government has participated in varying degrees in the field of energy. It supervises closely the development of atomic energy, and at various levels it plays a role regarding coal, electricity, and natural gas. Although its licensing policy exerts a strong influence over the petroleum industry its direct participation is least in this area.

1. Coal Mining

There are three private sector and one public sector coal mining enterprises. The latter is the Dutch State Mines (DSM), an integrated chemical and mining company whose coal mining branch is in the process of liquidation (along with the private coal mining operations). However, because of the Government's interest in substituting coal for natural gas and petroleum, the possibility of reviving the Dutch coal industry is under study. Trade in solid fuels is wholly in private hands.

The Government provides help to the coal industry so that production may be maintained long enough to prevent unemployment. It also pays severance pay for redundant miners. It has worked out a gentleman's agreement with municipal and provincial electrical utility companies under which they have agreed to use quantities of indigenous coal over a certain period for which they pay an uneconomic price.

The importance of coal in the Dutch economy has decreased drastically since 1950 when solid fuels accounted for 80 percent of Dutch sources of energy. Dutch coal production "dropped from about 12 million tons in the fifties to less than 2 million in 1973 "[11] The share of coal in total energy consumption fell to 4 percent by 1974. The Ministry of Economic Affairs estimates that total recoverable coal reserves in Holland amount to about 1,500 million tons. Resuscitation of the Dutch coal industry, however, would require major changes and technological improvements. The Minister of Economic Affairs "intends to appoint a commission to examine the long-term possi-

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[10] Summary of a paper on the energy situation presented by the Dutch Minister of Economic Affairs, Mr. R. F. M. Lubbers, to the Dutch Parliament, prepared by the Ministry of Economic Affairs, October 1974, U.S. Department of Defense intelligence information report, The Hague, November 13, 1974, Report No. 6868 0359 74 p. 2.

[11] Energy Policy Paper, op. cit., p. 13.

bilities of mining Dutch coal." The Government would like to promote the consumption of coal in the Netherlands as far as possible—especially by electricity generating stations—"assuming that the effect on the environment of coal burning can be kept within acceptable limits in properly equipped plants." [12]

2. The Electricity Industry

Enterprises engaged in generating and distributing electricity in the Netherlands are almost exclusively owned by the provinces and municipalities. Electricity is produced by 14 generating companies, which also distribute 75 percent of the electrical power produced; the remaining 25 percent is handled by about 80 non-producing companies. The producing companies collaborate in an umbrella organization called the N.V. Samenwerkende Elektriciteits Produktiebrijven (SED). "The SED coordinates the installation of production capacity and the construction of major transmission lines according to its Electricity Plan." The plan is not subject to Central Government approval. The Ministry of Economic Affairs intends to require that "the time, place, extent, and fuel consumption of new production" receive ministerial approval.[13]

In 1974 electricity production in the Netherlands was accounting for about 20 percent of fossil fuel consumption. The industry has increasingly turned from coal to natural gas and oil as a source of energy. Dutch planners are therefore in favor of requiring new stations—except nuclear power plants—to be capable of burning coa .[14]

3. The Gas Industry

Exploration and production of natural gas is carried on by private companies, but distribution is in the hands of the Netherlands Gas Union (Gas Unie) of which the Dutch Governments holds 50 percent of the shares—including 40 percent indirectly. The other 50 percent is owned by the Netherlands Aardolie Maatachappy (NAM), which is 50/50 Royal Dutch-Shell and Exxon. Gas Unie supplies large consumers directly. Other gas customers obtain their supplies through municipally owned regional distribution companies. In the past the Government has not intervened in the free negotiations for the sale of natural gas by private producers to Gas Unie but the Government is now planning to introduce a bill in Parliament giving the Ministry of Economic Affairs the power to fix minimum prices for the supplying of natural gas by the operators to the Gas Unie and foreign customers. The State's share in the additional revenues resulting from price increases which are planned for 1975 will be about 90–95 percent and is expected to yield an additional 2.5 billion guilders to the Treasury (approximately $1 billion).[15]

The Dutch natural gas reserves are presently estimated at over 2,500,000 million meters.[16] The largest share lies underground in the huge Groningen field discovered in 1959 by the NAM.

Various plans have been reported for the expansion of Dutch natural gas consumption. For example, as noted earlier, the 1974 International Petroleum Encyclopedia states that "the Netherlands

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[12] Ibid., p. 13.
[13] Ibid., p. 18.
[14] Ibid., p. 18–19.
[15] Ibid., p. 10.
[16] Ibid., p. 10.

is mapping a $500 million program for a switch over to natural gas from oil as fuel for heating and industry by the end of 1974." This program was to increase the share of gas in the country's energy picture from 45 to 60 percent.[17]

Recent studies suggest that Dutch natural gas reserves will be exhausted by the end of the century if the present rate of consumption continues. The forecast is bringing about a change in emphasis in Dutch energy policy. Thinking is turning more and more to methods of conservation. The plan to increase natural gas prices so as to bring them in line with the greatly increased prices for oil is an indication of this new approach.

4. The Atomic Energy Industry

At present less than 5 percent of total installed capacity for electricity generation in the Netherlands consists of atomic energy.[18] The Dutch Government is planning to have three 1,000 MW atomic energy plants in operation by 1985. The Atomic Energy Act is to be supplemented by creating a state monopoly for the generation of electricity with nuclear energy. "The government will be able to delegate certain powers" but it "will be able to secure its influence so that its primary responsibility for the use of atomic energy remains intact." [19]

5. A Brief Note on Royal Dutch-Shell

While the primary focus of this study is government-petroleum industry relationships and policies regarding the handling of domestic petroleum production, any study on the Netherlands petroleum industry would be incomplete without at least a brief reference to the great international Dutch-based petroleum company, Royal Dutch-Shell, which was organized for the purpose of developing a petroleum industry in the Dutch East Indies. The Royal Dutch Petroleum Company was established in 1890. It was the creation of a Dutch pioneer named Zijlker who had struggled in the Dutch East Indies for a decade "to prove that the oil which he had first seen burning on a native torch in Sumatra could be gotten from the earth in sufficient quantities to justify bankers in risking their capital." [20]

By 1892 the new company succeeded in getting oil in commercial quantities produced and delivered portside ready for shipment, in organizing a distribution and sales system, and in surviving—although often at the edge of bankruptcy—a series of price wars with petroleum giants like Standard Oil. In 1905 Royal Dutch merged with the British firm The Shell Transportation and Trading Company. It was a natural development. The Royal Dutch and their associated Dutch companies in the East Indies were large producers with a small distributing organization; the Shell and associates were very small producers with a very large distributing organization. Moreover, the Dutch managers realized that there were advantages in bringing a strong British presence into the firm:

> As a Dutchman, he [Deterding, the Dutch Managing Director] knew from experience the commercial disadvantages of belonging to a small Empire like that of Holland,

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[17] The International Petroleum Encyclopedia, op. cit., p. 22.
[18] Energy Policy Paper, op. cit., p. 15.
[19] Ibid., p. 17.
[20] Henriques, Robert O. Q., Marcus Samuel: First Viscount Barsted and founder of "The Shell" Transport and Trading Company, 1853–1927. London, Barrie and Rackliff, 1960. p. 144.

> knew the limitations of a purely Dutch company dependent upon cautious investors, an overcautious Board, and the panics of the Amsterdam Bourse, unendowed with the power and prestige in world commerce which was bestowed by the flags of the "greater" nations, supported abroad by a few traditional gunboats but unsupported by the shadow of a great fleet.[21]

The merger took place at a time when Shell was under severe financial pressure. Thus the Dutch were able to insist that they should hold 60 percent of the amalgamated holding company, with 40 percent allotted to Shell. Thus from a legal point of view the management of an important British firm passed to the Dutch. But in fact the company was not run along national lines. Henriques has written:

> The sixty-forty division receded into a legalism between the holding companies: the Shell and the Royal Dutch. For the rest, nationality hardly counted. It was a man's ability that qualified him, not the country of his origin. Management tended to concentrate in London because of London's pre-eminence in world commerce. That is why Deterding, contrary to his earlier expectation, worked from London. If ever there was tension it was between London and the Hague—not between British and Dutch.[22]

Today the company is still "a holding company which in conjunction with The 'Shell' Transport and Trading Company owns, directly or indirectly, investments in the numerous companies comprising the Royal Dutch/Shell Group of Companies." These companies "are engaged in the various branches of the oil, natural gas, chemical, and metals business in over one hundred countries." [23] In 1972 the total Group production grossed 4,504,000 barrels per day of crude oil and natural gas liquids. It had a tanker fleet of 421 vessels. Its total turnover for financial year 1972 of 5,743 million.[24]

Royal Dutch/Shell has played an important part in the development of the oil resources of the North Sea area. For example Shell U.K. holds 50 percent of the development rights of a major oil field in the North Sea known as Brent, about 100 miles north-east of the Shetland Islands. It is anticipated that production can start in this field in 1975.[25]

It was the NAM company (50–50 Royal Dutch/Shell and Exxon) which discovered the Groningen natural gas field, the largest field in the Netherlands, with known reserves in excess of 70 trillion cubic feet.

IV. Government Relationship With the Petroleum Industry: By Sector

A. EXPLORATION AND PRODUCTION

Petroleum was discovered in the Netherlands in 1943 at Schoonebeck near the German border. Production from this and other fields

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[21] Ibid., p. 415.
[22] Ibid., p. 415.
[23] Gray Lionel F. and Jonathan Love (editors), Jane's Major Companies of Europe, 1974 edition. London, Low, Marston & Co., 1974, p. F129.
[24] Ibid., p. F130.
[25] Ibid., F129.

reached a peak of more than 125,000 barrels a day but recently has dwindled to about 26,000 barrels a day.[26] Concessions and drilling licenses for petroleum have been granted for extensive parts of Dutch territory in the North Sea. But the Dutch Ministry of Economic Affairs considers the chances of finding large deposits of petroleum fairly remote.[27]

The Dutch Government does not engage directly in the exploration or production of natural gas and petroleum. However, under the Dutch licensing system the Government has the option of acquiring up to 40 percent participation in newly licensed operations. In 1973 the Oil and Gas Journal reported: "The Dutch Government will exercise its option in its most recent round of production licenses."[28] In general the Government keeps a close watch on the development of the country's energy economy but does not attempt to control its business activities.

Title to natural gas and petroleum reserves in the Netherlands, under Dutch territorial waters, and in the portion of the North Sea under Dutch jurisdiction is vested in the Dutch State. Under the terms of the Dutch Continental Shelf Mining Act of 1967 the Government is authorized to grant licenses for exploration and production to individuals and corporations. The Dutch concession policy is very liberal. The applicant may be of any nationality and the holder of a concession has free disposal of the oil discovered.

1. Licensing

The Dutch Government issues two types of license: a prospecting (exploration) license and a production license. The former is issued for 15 years for blocks of 400 square kilometers each. After 10 years the Government can reduce the area by one half. The licensee is required to spend $1,680 per square kilometer in exploration in the first five years and double that amount for the last five years. The license "conveys exclusive exploration rights including a right to drill to formation depths."[29] The holder of a prospecting license is normally awarded the production license for the area involved, but the Government does not award it "until the Inspector General of Mines is satisfied that a commercial deposit has been discovered."[30] A production license runs for 40 years but cannot be renewed.

The conditions governing the licensee's operations are carefully spelled out. The regulations provide that "exploration for or production of minerals (including petroleum) may not be carried out otherwise than in accordance with a suitable working plan, forwarded in writing to the Inspector of Mines."[31] The Government sets high standards of quality, safety, and environmental protection, but they are stated in broad terms which place the responsibility for detailed planning and performance squarely on the licensee, who is subject to close government review and supervision. Thus, one regulation requires production to take place "with such speed and aid and on such a

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[26] International Petroleum Encyclopedia, op. cit., p. 20.
[27] Energy Policy Paper, op. cit., p. 14.
[28] Oil and Gas Journal, 71, October 15, 1973, p. 56, quoted in White, Irving L. and others. North Sea Oil and Gas: Implications for Future United States Development. Norman, University of Oklahoma Press 1974, (second printing) p. 24:
[29] White, op. cit., p. 17.
[30] Ibid., p. 18.
[31] Ibid., p. 32.

scale and manner as is justified from the point of view of efficient management and rational development of the mineral deposit." [32]

The required work plan is reviewed in detail by the Oil, Gas, and Salt Division of the Directorate of Mines. During this review the operator is usually called in, and his differences with the Division are discussed and, if possible, resolved through informal negotiation. When the Division is satisfied, production can begin.

Under the terms of both the prospecting and production licenses the operator is kept under close government supervision. The commencement or abandonment of each mining installation requires a new work plan. A drilling program must include a statement of planned surveys, formation tests, core intervals, and mud systems. A detailed weekly report of progress must be kept on all projects, including chemicals, muds, and characteristics of strata. During the production phase close supervision is also maintained. An annual work plan must be forwarded to the Inspector General of Mines.

"Certificates of approval are required for mining installations, which are regulated as to placement, safety, and construction." The company must submit production reports 14 days after the end of every month.[33]

2. Financial Arrangements

The Dutch Government charges no application fees for either a prospecting or production license, but a fixed fee of $280 per square kilometer is collected in the case of a prospecting license. A prospecting licensee must also pay an annual fee on a sliding scale: $14 per square kilometer for the first year; $28 per square kilometer for the next four years; and $48 per square kilometer for the last five years.[34]

Financial considerations for a production license consist of annual charges based on area plus royalties. An annual charge of $84 is levied on each square kilometer. Royalties are levied on a sliding scale. For production between 100,000 and 200,000 cubic meters the rate is 2 percent. The rate then increases by steps until it reaches the upper limit of 16 percent for production over 6 million cubic meters. Royalties for gas production are also based on a sliding scale.[35]

B. REFINING

Oil refining plays an important role in the Dutch economy. In 1972 exports of crude petroleum and products represented roughly 9 percent of total exports, and "exports of refined products accounted for a large part of this amount." [36] (Transshipments through Rotterdam which do not enter Dutch customs, but which are voluminous, are not included in these statistics).

According to figures supplied by the Dutch Ministry of Economic Affairs, the capacities of the six refineries in the Netherlands totaled 98.9 million tons a year in 1973. The breakdown by individual company is given in the following table.

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[32] Ibid., p. 23.
[33] Ibid., p. 71.
[34] Ibid., p. 19.
[35] Ibid., p. 22.
[36] American Embassy, The Hague, Airgram A-25, January 31, 1974, Enclosure 1, p. 8.

REFINERY CAPACITY IN THE NETHERLANDS [1]

[In millions of metric tons]

Company	End 1971	End 1973
Shell	25.0	30.0
BP	14.0	25.8
Esso	16.0	16.0
Chevron/Texaco	12.5	15.9
Mobil (Amsterdam)	4.0	6.5
Gulf	4.5	4.7
Total	76.0	98.9

[1] Airgram A–25, op. cit., enclosure 1, p. 8.

Through 1972 refining capacity increased rapidly but began to level off in 1973. In 1974 the completion of a new refinery near Issingen brought the figures up to 105.4 million metric tons. At the present time there are no plans for further expansion of refinery capacity.[37]

The quantities of refined petroleum products by type are given in the following table.

REFINERY PRODUCTION [1]

[In millions of metric tons]

Products	1971	1972	1973 (January-September)
Coal tar	66	70	(2)
Raw benzol	21	16	(2)
Refinery gas	26	106	94
Liquid gas	785	858	745
Naphtha	4,511	6,103	5,261
Aviation fuel	2,419	3,332	2,842
Gasoline	4,833	5,290	4,380
Special gasolines including white spirit	354	338	286
Kerosene	1,239	1,259	825
Gasoil and diesel fuel	16,923	19,526	15,711
Fuel oil	23,576	26,601	21,158
Lubricating oils and greases	558	478	327
Bitumen	927	975	711

[1] Airgram No. A–25, op. cit., enclosure, p. 12.
[2] Not available.

Source: CBS Statistisch Zakboek and Maandschrift.

C. TRANSPORTATION AND STORAGE

Almost all of the oil consumed in the Netherlands today is brought into Rotterdam and other Dutch ports in privately owned tankers. Dutch natural gas is distributed through a large network of pipelines. The 9,315 mile pipeline from newly discovered fields in Groningen and Dearthe provinces to Italy, Switzerland, and West Germany now under construction "is the largest transportation project ever undertaken in Europe." [38] Gas Unie is also expanding its domestic pipeline network as are some private gas producers.

[37] Airgram No. A–117, op. cit., Enclosure, p. 1.
[38] Petroleum Encyclopedia, op. cit., p. 20.

Storage facilities are being expanded through the Maasvlakte storage project set up by Esso, Shell, Chevron, BP, Total, and Paktank (an independent oil storage company). Facilities for supertankers are being built in the Europort Maasvlakte area, including reportedly one position for a 500,000 ton tanker.[39]

D. MARKETING

Although traditionally the Dutch Government did not interfere in the marketing or pricing of petroleum, recently as a result of the oil crisis more and more government action in the marketing field has been taken and is being proposed. In 1972, the OECD reported that the Dutch Government did not control the prices of oil products nor intervene in the free negotiations for the sale of natural gas to the Gas Unie. However, recent Dutch newspapers suggest that the Government is beginning to play a role in the pricing picture. For example, the Algemeen Dagblad of November 11, 1974, reported: "Against the will of the oil companies the gasoline price will drop one cent per liter."

Although discussions "were held with oil companies on this price change a Shell spokesman said the new price was imposed on them. For the oil companies it means a lower profit because station owners keep their profit margins in gas." [40] The American Embassy in The Hague reported in June 1974 that product/prices have risen with government consent. "Refineries complain, however, that they have been allowed to recover only 75 percent of the cost increase of crude through product price rises, especially gasoline." [41]

At the height of the gas crisis, the Government set up a gasoline rationing system which lasted only three weeks in January. "A moderate slackening of demand, sufficiency of supply, and the competitive effect of uncontrolled sales in neighboring countries combined to cause a quick end to rationing." [42]

E. IMPORTS-EXPORTS

As noted above, the Netherlands is a heavy importer of oil both for its own consumption and for refining and re-exporting to its European neighbors.

Dutch imports and exports for the first eight months of 1973, broken down by country of origin and destination, are shown in the following table.

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[39] Airgram no A-25, op. cit., Enclosure, p. 9.
[40] Translation supplied by the American Embassy, The Hague.
[41] Airgram No. A-117, op. cit., Enclosure, p. 2.
[42] Ibid., p. 1.

CRUDE OIL [1]

[In millions of metric tons]

			Refined products	
	Imports from	Exports to	Imports from	Exports to
Abu Dhabi	3.0			
Algeria	.6			
Belgium/Luxembourg		6.8	1.0	3.4
Denmark		1.5		6.0
France		.6	.7	.4
Gabon	.6			
Germany, Democratic Republic		.8		
Germany, Federal Republic		5.2	.7	15.5
Iran	16.3			
Italy			.9	
Kuwait	14.0		.5	
Libya	2.4			
Nigeria	7.9			
Norway				.5
Qatar	4.2			
Saudi Arabia	25.9		.8	
Spain		.7	.4	
Sweden		.8		1.2
United Kingdom		2.9	1.1	6.4
United States				.6
U.S.S.R			1.4	
Others	1.6	.4	1.3	10.8
Total	76.5	[2] 19.8	[2] 8.7	44.8

Note: Only principal origins and destinations are shown; "Other may include smaller quantities attributable to countries listed with blanks in the respective columns. This table does not reflect transshipments which do not enter Netherlands customs." Source: Central Statistical Bureau.

[1] Airgram No. A–25, op. cit., enclosure, p. 12.
[2] Figures do not add to totals due to rounding.

Of the total imports of crude petroleum in 1973 amounting to 81.9 million metric tons more than half (53.7 million metric tons) were re-exported.

The Netherlands' large scale export of natural gas has continued to mount rapidly, almost doubling in two years from 17.2 billion cubic meters in 1971 to an estimated figure of 31.4 billion cubic meters in 1973. The leading purchasers were Germany, Belgium-Luxembourg, and France in that order.

The estimated total value of Dutch natural gas sales for 1973 was estimated at 2.6 billion guilders (approximately $1 billion). The American Embassy has reported that "it is announced that in 1971 natural gas exported supplied a balance of payments benefit of 2 billion guilders ($800 million) to the Dutch economy, counting both proceeds from foreign sales and domestic substitution for petroleum products." For 1972 a benefit of 2.5 billion guilders (approximately $1 billion) was claimed.[43]

The volumes of natural gas production, exportation, and domestic consumption in 1971–1973 are given in the following table.

[43] Ibid., p. 8.

GAS PRODUCTION, EXPORTS AND DOMESTIC CONSUMPTION

	1971	1972	1973 estimates
Total production	43,515	57,951	71,000
Export	17,165	23,817	32,800
Belgium-Luxembourg	(6,247)	(7,880)	(9,900)
France	(4,428)	(6,124)	(8,000)
Germany	(6,490)	(9,813)	(14,900)
Domestic consumption	26,350	34,134	38,200

Source: Nederlandse Gas Unie.

F. TAXATION

Netherlands fiscal policy is generally based on purely budgetary considerations, and taxation is not used as an instrument of energy policy. Energy industries, including the oil industry, are subject to the general system of direct taxation, corporation tax being levied on world-wide profits. Netherlands fiscal policy endeavors to avoid double taxation of profits. Since no large scale discoveries of oil have occurred in the Dutch portion of the North Sea, the Netherlands Government has not been faced with the problems which have led the British Government to consider a "ring fence" policy for oil operations in the North Sea. The profits of provincial and municipal electricity and gas generation production and distribution undertakings are not liable to tax; they supply the whole of the country and are operated or administered by the local authorities. In the case of indirect taxes, the value added tax (VAT) applies in the Netherlands, but most energy products are regarded as primary necessities and, as such, are taxed at reduced rates. However, gasoline has been subject to the value added tax (VAT) since its introduction in January 1967 at the normal rates (12 percent up to January 1, 1971, and 14 percent since that date). Since January 1, 1972, electricity has been subject to the normal VAT of 14 percent. Heavy excise taxes are levied on gasoline and diesel oil. (A gallon of gasoline costs roughly $1.60 at the pump, the excise tax accounting for about two thirds of the price.) Excise taxes are not levied on mineral oils used as raw materials for heating and lighting, international shipping, aircraft on international routes, and horticultural and market gardening products intended for export. The Dutch Government is considering further possibilities for using taxation as a means of reducing the consumption of petroleum products in the future. (See section V.)

V. Government Plans

In recent months the Netherlands Government has been increasing the scope of its planning on energy in response to the problems created by the international energy crisis. The outlines of this planning are set forth in a paper prepared by the Dutch Ministry of Economic Affairs. This paper summarizes a report which the Minister of Economic Affairs, R. F. M. Lubbers, presented to the Dutch Parliament in October 1974. A copy of this summary is enclosed as Attachment A.

The paper gives a brief review of the energy situation in the Netherlands and then proposes specific courses of action. But, with the exception of a new gas pricing law, none of these proposals have yet been put into effect.

The objectives stressed are: maximum economy in energy consumption, a slower depletion rate of natural gas reserves, the formation of a strategic gas reserve, and maximum efficiency in the use of petroleum and petroleum products, using them if possible only where they are indispensable. Specific possible courses of action to be examined are:

1. A slowing down of the growth in energy consumption by industry (by more economical consumption, a different pattern of industries, etc.);
2. A slowing down of the growth of electricity consumption;
3. Slower growth in fuel consumption in the "household and public" sector, for instance by a movement in vehicles towards diesels, continuance of the "3x5" campaign,[44] and a different tax approach to petrol driven cars exceeding 2000 cc;
4. Operation in or about 1985 of three nuclear fission power plants of 1000 MW each;
5. Promotion of coal consumption by electricity generating stations to 3 to 4 million tons a year; this may not reduce total energy consumption but it does improve the distribution over energy sources;
6. Changing building regulations for new houses so that all houses built after 1975 will have heat insulation, such as double glazing, roof insulation, and filled-in cavity walls;
7. Measures to promote better insulation of existing homes having central heating;
8. Ensuring that the average living temperature (as far as reached by heating) is reduced.[45]

The paper then goes on to consider some policy proposals of a more general nature relating to prices and rates. It makes the following points:

> . . . the possibility will have to be examined of whether consumption categories should be slowed down for certain consumer categories by incorporating incentives in the rate and price structure with a view to keeping below a given consumption . . .
>
> In taxation, a number of measures are conceivable with the object of comparatively better treatment of private cars with diesel engines, heavier taxation of larger private cars and pleasure motorboats.
>
> As regards the insulation of existing homes, tax concessions and subsidies may prove necessary. Good insulation of new homes etc. will be prescribed by means of building regulations.[46]

Ministry of Economic Affairs planning also includes a proposal to set up a Government corporation (The Netherlands Energy Development Company) to undertake the practical application of promising results obtained by research institutions.

The Government is also planning to participate more actively in petroleum exploration and production.

The State will take a 40 percent interest in recovering natural gas deposits from the Continental Shelf. The present legislation allows this to apply also to natural gas in areas where prospecting licenses have already been granted in the past. In addition, measures will be pro-

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[44] By this is meant 5 percent petrol saving by less frequent use of cars, 5 percent by more intelligent use of cars and 5 percent petrol saving by slower driving.
[45] Energy Policy Paper, op. cit., p. 7.
[46] Ibid., p. 8.

moted so that the State can acquire a 40% interest in petroleum recovery. This applies to areas for which no prospecting licenses have as yet been granted.

A change will also be made in the State's share of profits from petroleum and natural gas recovery, so that the State's proceeds increase to over 80 percent with a 40 percent participation.

VI. Conclusion

The Dutch Government is clearly in the midst of a thorough and serious study of its relations with the petroleum industry and the oil consuming public. Although it is not yet aiming at a majority participation in petroleum exploration and production based on the North Seas as is the case with the present British Government, the Dutch participation of 40 percent should significantly increase governmental stakes in the hydrocarbon industry. And Dutch officials have apparently carried their thinking regarding the reduction of consumption through taxation and other means further than is the case in many other European countries.

APPENDIX

Summary of the Paper on Energy Policy by Dutch Minister of Economic Affairs R. F. M. Lubbers

Summary of the Paper on the Energy Policy

The Minister of Economic Affairs, Mr. R. F. M. Lubbers, has presented a Paper on the energy situation to Dutch Parliament.[1]

This paper sets forth the various aspects of energy policy in their interrelationship. The basic assumption is that energy sources can and must be interchangeable and that energy policy as such must be integrated with socio-economic policy and attuned to other elements of government policy, including those concerning the environment. International contexts also play a major part.

The paper thus aims at an integrated approach. It is intended to provide the impulse for policy for the next ten years and to be the starting point for discussions on the basic policies to be selected as such. It is not therefore the "final word". Developments in the energy situation are still in such a state of flux that assessments are quickly outdated. Furthermore, international decisions will influence the Netherlands' policy. Scope must therefore be left for adjustments in the light of new experience. Also in some places, the paper merely points to a problem or indicates variants in policy.

A new element of policy is the deliberate limitation of the growth of energy consumption. After the experiences following the oil crisis this now becomes a more permanent policy.

This limitation of the growth of energy consumption is motivated both by weighing the various economic and non-economic objectives and by energy policy in the narrower sense; the Netherlands' energy economy should become more flexible and consequently it is necessary to have a strategic reserve of natural gas available. This means that by slowing down the rate of depleting stocks of natural gas we may be able to make them last longer and also form a reserve for use in emergency.

The traditional role of the government in energy administration will have to be increased. There are new duties ahead for the government both on the demand side (limitation of the growth of energy consumption) and on the supply side (the widening of supplies by volume and variety). This can be done not only by promoting and channelling political orientation regarding what is desirable but also by taking stimulating or retarding action in certain cases. It is essential that in other cases the authorities themselves will have to perform certain duties.

The world energy situation

World energy consumption, over 98% of which was provided in 1972 by depleting fuel stocks, rose from 1950 to 1972 from 1900 million to 5500 million tons oil equivalent, i.e., by about 5% per annum.

The proportion of coal and lignite fell from 61% to 32%, that of petroleum rose from 28% to 47%, that of natural gas from 10% to 19%; the proportion of primary electricity (hydroelectric power and atomic energy) remained at the low level of approximately 2%.

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[1] Prepared by the Ministry of Economic Affairs, October 1974.

The per capita consumption of energy varies considerably from country to country. There is a pronounced connection with the level of G.N.P.

Production and consumption of energy are very unequally distributed over the globe; there are therefore vast and important transport streams.

Some of the major industrial zones are particularly dependent on imported energy. This applies especially to petroleum. In 1970, 60% of Europe's net energy requirement were covered by imports; Japan's as to 85% against only 7% in North America.

World reserves of the various basic energy materials vary very greatly. Ultimate stocks of coal and hydrocarbons (natural gas and petroleum, including that from shales and tar sands) are about 12,000,000 million tons oil equivalent. This corresponds to 2,440 times the total world energy consumption in 1970. About 90% of these consist of coal. In world energy consumption, however, coal is in the minority. The interchangeability of the various energy sources is subject to many limitations; in coal, moreover, transport costs play a proportionately high part.

Fissionable material, using the present types of nuclear fission reactors and based on present views on uranium recovery, is available up to several hundred times the world's energy consumption in 1970. Technologies such as breeder reactors and perhaps nuclear fusion may potentially bring about a very substantial increase in energy supplies.

Reserves can be seen in better perspective if they are related to future energy consumption. This depends very much on the presumed growth in consumption. If the same average annual growth rate is taken as for recent decades (about 5%), and disregarding the as yet unoperational nuclear fusion and solar energy and also breeder reactors, reserves would be adequate for another century.

In the short run, bottlenecks will become evident. Some sectors of consumption are now dependent on only one energy source (for instance oil in the case of road transport); there is no guarantee of uninterrupted supplies; the environment is making higher demands; movements within the range of energy supplies require heavy capital investment, and so on. Tensions in the world energy market must thus be allowed for, especially in petroleum.

In this light—in any case in the short and medium long term—the prime need is to limit world energy consumption.

Limitation of the consumption of fossil fuels for generating energy is also desirable because these are becoming an increasingly important basic material for chemical processes.

Limitations must not be made at the expense of developing countries. Possibilities of savings exist primarily in the industrialised countries.

The Netherlands energy situation so far

The Netherlands' energy consumption increased by an average of nearly 5% per annum from 1950 to 1960 and then by over 8%. A major factor in this has been the availability of Dutch natural gas.

This is also evident from the changes in the structure of the country's energy consumption. In 1950, solid fuels still accounted for 80% and oil for the remaining 20%. In 1973, the pattern was greatly changed:

coal accounted for only 4%, petroleum for 46% and natural gas for 50%.

Dutch natural gas is exported in large quantities. In 1974 the country for the first time has exported more energy than it has imported. But this will not last long. For coal and petroleum the country is virtually dependent on imports.

As regards petroleum, supplies, transhipment and processing in the Netherlands are far greater than needed for our own requirements. Rotterdam and the Rijnmond area play a major part in this. The significance to the Dutch economy of the development of Rotterdam and the Rijnmond area into Europe's greatest petrochemical industry region is very substantial.

Since the beginning of the sixties, energy consumption per unit of gross national product and per job (unit of employment) has greatly increased. There has also been a rapid increase in energy consumption in the home; the growth rate increased from about 3.5% per annum in the period 1950–1960 to about 9% per annum between 1960 and 1970. One reason for this is the big increase in central heating and an increase in the average living temperature. Partly owing to low energy prices, this country has done little regarding insulation of homes etc.

In the family sector, electricity consumption also greatly increased—by about 10% per annum in the sixties. In addition, the rapid increase in car ownership has also brought an increase in family energy consumption.

In transport, the consumption of petrol and diesel oil has steeply increased. Diesel engines have a higher energy efficiency than petrol engines; small diesel engines for private cars are hardly in the market.

Industry uses one-third of all the energy consumed in this country. There have been considerable changes in this, by volume in the pattern of energy sources and by industries. Natural gas, at about 40%, is now the main energy source, followed by electricity, petroleum products and coal. The chemical industry, at over 40%, is the biggest user followed by the engineering industry (including metallurgy), at over 25%. The growth in energy consumption by the chemical industry, about 16% per annum since 1960, has been twice that in the rest of industry. This includes, however, the use of natural gas as a basic material for the chemical industry.

In most industries, energy is a comparatively small cost item compared with wage and capital costs; exceptions are shipping and aviation, market gardening, metallurgy and chemicals.

Viewed against the background of utilizing energy as economically as possible, the obvious idea would be to try and give low-energy industries a comparatively more important place in the pattern of activities by means of selective growth. In the opinion of the Minister of Economic Affairs, this would definitely be feasible in the international context.

Ultimate assessment of the importance of certain industries of course demands attention not only for energy consumption; but employment, added value and the export contribution must be taken into consideration as well. The interrelationships and considerations will be set forth in a policy document on this country's economic structure, which the Minister will present to Parliament.

Some potential lines of development in the Netherlands' energy situation up to 1985

If past growth rates continue unchanged, energy consumption in 1985 will be 2.5 times that in 1973. The distribution over energy sources is marked by a very great relative decline in the role of natural gas and a very greatly increasing proportion of petroleum, with the consequence of much greater dependence on other countries. Domestic consumption of petroleum would become over four times as great from 1973 to 1985.

The fact of the drastic changes in the world energy market alone makes these figures unrealistic.

More realistic balance sheets have been drawn up in collaboration with the Central Planning Bureau for the years 1980 and 1985; they incorporate as fully as possible certain extraneous influences and already detectable trends, especially those arising from the greatly increased prices.

Some characteristic assumption are smaller growth rates in industrial production than in the past; a lower growth rate for family and public electricity consumption; modest imports of natural gas and the use of existing nuclear energy capacity for electricity generation alone.

These latter figures differ greatly from those if growth were to continue unchanged. On this assumption, the total consumption in 1985 is only about 65% of the level of that with unchanging continued growth. The proportions of energy sources in total energy supplies would develop as follows. Natural gas would fall from 50% in 1973 to 28% in 1985; petroleum would rise from 46% to 68%; coal would fall slightly, while nuclear power would remain negligible.

Dependence on other countries would still increase—from 46% in 1973 to 73% in 1985.

With these forecasts, there is still significant growth in the Netherlands' energy economy, viz. from 5.3% per annum in 1973–1980 and then of about 4.2% up to 1985, while dependence, especially on imports of oil, greatly increases. All of this demands a more far-reaching policy.

The Netherlands' future energy strategy

Until some time ago the objective of energy strategy was the guaranteed, uninterrupted supply of every demand for energy at the lowest possible cost, with the choice left to the users. This objective was in conformity with the well-known five socio-economic macro-objectives of government policy: balanced growth, full employment, retention of money values, a balance of payments surplus and fair income distribution.

In the meantime, factors such as the awareness of the finite nature of basic material reserves, the greatly increased attention to our environment, and the recent oil crisis, have compelled further reflection on the objectives of our energy policy. Consequently, the objective now becomes: "A guaranteed supply of the demand for energy, resulting from the most economical consumption possible, at the least possible social cost; supply and demand must fit into a more balanced system of international labour and income distribution and must be weighed against the needs imposed by ecological adaptability, safety and the employment situation."

This central objective involves: arranging the production, distribution and consumption of energy so that a flexible system arises as regards quantities and types; promoting the supply of energy and developing new sources and techniques; ensuring that decision-making regarding energy is as clear and effective as possible, both nationally and internationally; striving for a political-economic system in which allowance is made for the interests of consuming and producing countries; ensuring the biggest possible contribution by Dutch commerce and industry and its research capacity to the Netherlands' energy economy.

Up to 1985 the Minister envisages the primary points of domestic policy as:

Maximum economy in energy consumption;
A slower depletion rate of the natural gas reserves;
Formation of a strategic natural gas reserve;
Maximum efficiency in the use of petroleum and petroleum products, using them if possible only where they are indispensable.

Achievement of this calls for a number of measures to moderate the increasing dependence of foreign countries, the increasing proportion of petroleum and the still greatly increasing growth in energy consumption. In determining the appropriate policy, attention must be paid to the macro-economic context; particular attention must be devoted to employment and the balance of payments.

Another special problem is that our biggest source, Slochterengasfield, is declining at a comparatively fast rate. In view of this depletion, the consumption of natural gas reserves must also be considered in connection with the strengthening of the future structure. This relates not only to the energy sector, but also to strengthening the productive structure and the social infrastructure in general.

Structural strengthening is, of course, one of the aspects considered in policy planning within the budget. Special emphasis on this, which is desirable in view of the time pattern in consumption of the available natural gas, does however need some time. In the years ahead more stress will be put upon the advisability of using the basically temporary flow of natural gas benefits for structural improvement in a wide sense.

For the time being, a number of variants have been formulated within the framework of energy policy in the narrower sense—policy measures or autonomous developments—and where possible the quantitative effect of each is given. The paper discusses in succession, without having the pretext of giving a complete enumeration:

1. A slowing down of the growth in energy consumption by industry (by more economical consumption, a different pattern of industries, etc.);

2. A slowing down of the growth in electricity consumption in the home and by public bodies, including active (official) information and by introducing an "economy test" for electrical equipment;

3. Slower growth in fuel consumption in the "household and public" sector, for instance by a movement in vehicles towards diesels, continuance of the "3 x 5" campaign)[1] and a different tax approach to petrol driven cars exceeding 2000 cc;

[1] By this is meant:
(a) 5 percent petrol saving by less frequent use of cars.
(b) 5 percent petrol saving by a more intelligent use of cars.
(c) 5 percent petrol saving by slower driving.

4. Operation in or about 1985 of three nuclear fission power plants of 1000 MW each;

5. Promotion of coal consumption by electricity generating stations to 3 to 4 million tons a year; this may not reduce total energy consumption but it does improve the distribution over energy sources;

6. Changing building regulations for new houses so that all houses built after 1975 will have heat insulation, such as double glazing, roof insulation and filled-in cavity walls;

7. Measures to promote better insulation of existing homes having central heating;

8. Ensuring that the average living temperature (as far as reached by heating) is reduced.

The overall effect of these measures would mean that up to 1980 the annual growth in energy consumption would be 4.5% (against 5.3% with a "no-change policy") and 2.2% from 1980 to 1985 (against 4.2% with no change).

Other features of this policy approach, which is a definite change as regards growth in energy consumption, are: much lower petroleum consumption and rather smaller natural gas consumption. Nevertheless, the proportion of petroleum continues to rise (1973: 45% 1980: 50% and 1985: 60%) and there is barely any scope for forming a strategic natural gas reserve.

Some policy proposals of a more general nature relate to prices and rates. In view of the recent big increase in prices of petroleum and other energy sources a general levy on energy consumption would now be neither right nor necessary. An effort is being made in individual markets to eliminate consumption-promoting elements in the rate and price structure. At least a uniform structure will have to be built up. The introduction of absolute standards for the maximum quantity of energy consumption per unit used is impracticable and has clear drawbacks. But the possibility will have to be examined of whether consumption should be slowed down for certain consumer categories by incorporating incentives in the rate and price structure with a view to keeping below a given consumption. Although there is an undoubted relationship between the growth in energy consumption and such incentives, closer study and consultation is required. So far this subject has hardly been investigated. Possibly business needs and energy policy desiderata can only be reconciled via differential levies.

In taxation, a number of measures are conceivable with the object of comparatively better treatment of private cars with diesel engines, heavier taxation of larger private cars and of pleasure motorboats.

As regards the insulation of existing homes, tax concessions and subsidies may prove necessary. Good insulation of new homes, etc. will be prescribed by means of building regulations.

Technically, various other savings may be possible, for instance with new methods of electricity generation and transmission; by using waste heat from generating stations and by higher efficiency in ultimate uses of this energy.

In order to take concrete and practical action regarding a number of processes and possibilities of importance to future energy supplies, and to invest capital aimed at their commercial application, the State will set up a Nederlandse Energie Ontwikkelings Maatschappij

(Netherlands Energy Development Company). This N.E.O.M. will not undertake research itself; but it will undertake the practical application of promising results obtained by research institutions in which the government is concerned, such as Reactor Centrum Nederland, TNO, Stichting Fundamenteel Onderzoek der Materie (F.O.M.). These processes should lead to the choices of actual projects, which will necessitate setting up as NEOM Supervisory Board at an early date. For instance, there would seem to be scope for NEOM activities in regard to coal. The NEOM will also be able to verify the feasibility of specific forms of solar and wind energy. In practice, collaboration with outside bodies will have to be possible in various ways. It will have to be examined to what extent use can be made—for practical work—of DSM's)[2] expertise and experience.

Since the NEOM will operate with public funds, government control is to be clearly regulated via an agreement with the State.

In addition to these measures aimed at the supply structure, a number of programmes will have to be worked out for coping with various cases of stoppages in basic supplies.

A good organisation structure is needed for decision-making in energy matters. A new Algemene Energie Raad (General Energy Council) will advise on actual energy policy. This will require the broadest possible social orientation and contribution of skills. With respect to the existing advisory bodies, the new Council will be able to take coordinating and streamlining action. It will also have to advise on revolving five-year plans.

For preparing and putting energy policy into practice, an official Steering Group will be set up.

At the Central Planning Bureau special organization facilities are to be provided to make numerical studies and analyses needed especially for multi-year energy plans, with the collaboration of experts from outside the Bureau.

Drawing up the multi-year plan and the long-term quantified investigation will also make it possible to analyse more precisely the relationship between energy policy and macro-economic trends.

In setting out a national policy it should be borne in mind that many aspects of the energy market are largely governed by international factors. Further international collaboration is imperative. The Netherlands' energy policy will be greatly influenced by that of the E.E.C. The European Commission's strategy has several principles that are endorsed, such as limitations on consumption and greater independence in supplies. In respect of the Community's nuclear power policy reservations have been made.

Natural gas

The proportion of natural gas in the Netherlands' overall energy consumption is now about 50%. This will decline, in spite of the fact that exploitation of a number of smaller gasfields is expected in the near future. Present known reserves of over 2,300,000 million m3 will be exhausted at about the end of this century since average annual production is about 5%.

The recent years' increases in oil prices and the absence of new major natural gas discoveries recently resulted in policy decisions leading, for instance, to (gradual) restoration of the price parity

[2] Dutch State Mines Ltd., a large state-owned petrochemical industry.

with oil; i.e. a price at which the consumer price of gas and oil are properly related. Policy is also aimed at more scope regarding the duration of contracts with large-scale users; limitations of supplies to generating stations, attainable by not making new supply contracts, not renewing existing contracts and, where possible, reducing contracted quantities.

There must be a clear price and consumption policy to prevent waste, and natural gas must be reserved for premium purposes, especially including the public supply system. Besides this, policy must be aimed at widening supplies, both domestic (including the Continental shelf) and imported.

The formation of a strategic natural gas reserve will be vigorously pursued by these means and by switching the take-up of natural gas as time goes by, in consultation with the large-scale users concerned.

Apportionment of the proceeds from Groningen natural gas has meanwhile been regulated in the sense that the State's share in the additional revenue due to price increases in 1975 has been greatly increased, to about 90—95%. For 1975, the extra price increase together with the new method of allocation is expected to yield another Fl. 2,500 million. In later years, extra proceeds of Fl. 4,000 to Fl. 5,000 million are possible.

A Bill will be submitted giving the Minister of Economic Affairs the power to fix minimum prices for the supply of natural gas by the operator to the Gasunie and to customers abroad. This Bill will give similar powers for supply by the Gasunie to gas distributing companies. The Minister's powers relating to prices for supplies to final consumers will be regulated at the same time.

Prices of natural gas in the large-scale consumer sector (supplies exceeding 170,000 m3 per annum) differ according to whether the contract was made or renewed before or after 1st January 1973. Contracts after this date allow the gas price to follow the oil price forthwith. The earlier contracts provide for certain limits, so that the gas price may temporarily lag behind the oil price. Having regard to the big difference in prices that might arise between the two types of contract, transitional measures were made for 1974. Another such arrangement will be needed for 1975. Bulk users' prices will go up by 5 ct per m3 in 1975.

In 1976, the transitional arrangement will no longer apply. Prices under the old contracts will then be about the same level as those under the new contracts, In that year, there will also be a price increase of about 3 ct per m3 if oil prices remain the same as at present.

Negotiations on small-consumer rates have been conducted with the VEGIN (Vereniging van Exploitanten van Gasbedrijven in Nederland—Dutch Gas Distributors' Association) and the Gasunie. The result has been a combination of the four existing rate categories into two with a limit—proposed by the VEGIN—of 600 m3 per annum. Besides an adjustment of the basic payment there would have to be an average price adjustment of 5 ct/m3. The Minister of Economic Affairs was at first of the opinion that the category of very small consumers (0—600 m3) formed a separate market, for which such an increase was unnecessary. Based on the reasons advanced by the VEGIN, the Minister believed however that there were no overriding reasons why he should oppose the proposals made by the VEGIN for

the new rates category I (0—600 m3) for 1975. This means that when the Bill is adopted and if all concerned comply with the VEGIN's proposal the prices to small consumers will rise by about 5 ct per m3. Percentage-wise, the increase is bigger for the larger small consumers; the basic price and the m3 price together bring about a variation in the price increase from about 19% to 51% for consumption ranging between 200 m3 to 30,000 m3.

An active government policy towards natural gas purchases is imperative. Hence, the contract between the State and the Gasunie will have to be supplemented in this respect.

Petroleum

In domestic consumption of primary energy, petroleum holds a leading position at about 25 million tons a year. The proportion has declined, however, especially in recent years, owing to the continuing penetration of natural gas (1970: 55%, 1973: 45%). There is also a major market for bunkering (12 million tons in 1973).

Until 1970 the world oil market was characterized by ample supplies of crude as compared with the demand. The consuming countries had little cause for anxiety about the continuity of oil supplies. Since then, oil prices have gone up and up. The OPEC countries' influence has increased, leading to those countries' governments receiving a bigger share of the proceeds, known as the "government take" and to greater participation by producing countries in oil companies. There were also some nationalisations. At the end of 1973, oil was used by a number of producing countries as a political weapon, among other things by way of production limitations.

North Sea oil, shale and tar sand oil may provide some—modest—alleviation of the dependence on oil from the present producing countries.

Developments since 1970 have basically changed the oil companies' positions. Nevertheless, their expertise and flexibility will continue to be of great importance. It can, however, be envisaged that their operations will be increasingly embedded within the lines indicated by governments, both in the producing and consuming countries and as between the states. This demands a national and an international approach. Joint venture agreements and basic agreements between the nations are bound to play a major part. The Minister prefers a multilateral approach, in view of the international character of the oil market and also in view of the international political aspects.

In February 1974, an Energy Coordinating Group was set up, in which twelve oil-importing countries are now cooperating. In the meantime a very valuable report has been drawn up on setting up of an effective international information system and a comprehensive crisis programme. Other subjects for discussion are consultation and collaboration between consuming countries and individual oil companies.

In the EEC, European Commission proposals are being disucssed regarding supervision over the oil companies, crisis measures and market regulations for petroleum and petroleum products. As regards the latter, the Minister believes price harmonisation and pricing rules should be in the forefront. In addition, attention is required for competition. As regards this, there is in fact a large measure of agreement.

At the national level, formal possibilities of conducting a national strategy are limited. But the oil companies have such an interest in production and sale in this country that the government can exert a substantial influence, provided it has sufficient information. The guarantees for doing this effectively will be increased. This can be achieved by agreement or by statutory regulations. In this context, a system may be envisaged wherein conditions are made for carrying on operations. The relevant modalities partly depend on the consultations within the European Community.

Coal

In 1950, coal was the main pillar (70%) of Dutch power supplies. The situation has drastically changed in the meantime. At present only 4% of national energy requirements are covered by coal.

In this country, coal production dropped from about 12 million tons in the fifties to less than 2 million tons in 1973. It was meanwhile decided that production would cease entirely by the end of 1974. The Minister stresses in this connection the major contribution by workers in the Limburg coal mines to post-war recovery and hence to national economic progress.

This country has technically recoverable coal reserves of 1,500 million tons. But at present, recovery of these mines is impossible. The Minister intends to appoint a commission to examine the long-term possibilities of mining Dutch coal. The expected trends in coal technology will have to be taken into account. In order that operation of the Emma State Mine—now being liquidated—should not be made completely impossible in future a number of conservation measures are being taken.

It must also be examined whether this country might play a part in operating the capacious world coal supplies, either for our own consumption or as a link in the international chain of trading and conversion. These possibilities gain emphasis in view of modern coal technology. Collaboration with countries experienced in coal conversion is an obvious step.

Policy is being aimed at promoting coal consumption in the Netherlands as much as possible—especially by electricity generating stations—assuming that the effect on the environment of coal burning can be kept within acceptable limits in properly equipped plants.

Concession and participation policy

The recovery of minerals on Dutch territory is based on the Mining Act of 1810. Mining operations in the Dutch part of the Continental shelf were regulated by the Continental Shelf Mining Act, 1967.

When the Continental Shelf Mining Act was passed, the Dutch conditions for natural oil and gas recovery were the strictest, compared with those of the other North Sea countries for deposits with low recovery costs. Following the big oil discoveries in the Norwegian part of the Continental shelf, that country's conditions were made much stiffer. The United Kingdom has also said it is going to sharpen its conditions.

Concessions and drilling licences for petroleum and natural gas have already been granted for extensive parts of Dutch territory. The number of prospecting and evaluation drillings in the Dutch part of the Continental shelf is relatively substantial.

It may be noted that the chance of finding large deposits is fairly slight.

In view of the depletion of Slochterenveld it is obvious that the discovery of petroleum and natural gas should be vigorously promoted. In this way, a timely stocktaking can be made of the still available deposits of these minerals.

The Minister believes that prospecting by the State itself is not preferable.

Directed and successful exploration, followed by production from new natural gas deposits can be brought into line with the necessary policy of forming a reserve, provided the production level of Slochterenveld is reduced accordingly when appropriate.

In order to ensure more State control and greater benefit for the community from national resources, the following policy will be carried on in the future.

The State will take a 40% interest in recovering natural gas deposits from the Continental shelf. The present legislaticn allows this to apply also to natural gas in areas where prospecting licences have already been granted in the past. In addition, measures will be promoted so that the State can acquire a 40% interest in petroleum recovery. This applies to areas for which no prospecting licences have as yet been granted.

A change will also be made in the State's share of profits from petroleum and natural gas recovery, so that the State's proceeds increase to over 80% with a 40% participation. A number of minor changes will also be made.

These changes in concession and participation policy will be applied as far as possible in the same way for our national territory. They have, of course, nothing to do with the special arrangements made for Slochterenveld.

Adverse effects upon the countryside from prospecting for and recovery of minerals will be avoided. As regards concessions already granted, arrangements have been made on the basis of which consultation is still possible. For future concessions, the Oele Commission [3] may designate certain areas exempted from any drilling operations. One or more properly conducted test drillings will take place in order to obtain a clearer idea of the effective consequences of prospecting and recovery operaticns for the natural environment.

Atomic energy

The first Paper on Atomic Energy of July 1957 envisaged speedy introduction, viz. up to 30% of the present installed capacity.

In actual fact, the total installed capacity for electricity generation has grown more rapidly than anticipated, but not even 5% of this consists of atomic energy.

So far the debate between advocates and opponents of atomic energy tends to overlap that about the continuing growth of energy consumption. In this way, the problem is not presented quite accurately. The Minister believes that the problem of growth in energy consumption must be tackled. As a consequence a forced and hence less justified use of atomic energy could be prevented. But the gradual introduction of atomic energy remains desirable.

[3] Named after Dr. Oele, its first chairman.

The adverse features of atomic energy lead to safety problems generally of a strongly international character. The main problems are those of radioactive waste and cooling water. Large-scale use of atomic energy is, in the Minister's view, therefore only justified to the extent that legitimate transnational structures are created so that effective international control is possible.

The advantages of atomic energy are obvious. With the present prices of fossil fuels and future prospects regarding these, atomic energy is a less expensive means of electricity generation. The use of atomic energy also means obtaining the desired diversification in energy supplies from the viewpoint of ensuring these. The air pollution unavoidable with fossil fuels does not occur.

Lastly, there are important motives from the aspect of employment and the balance of payments, especially if depletion of Slochterenveld is taken into account. As against this, there is great uncertainty among the public regarding the acceptability of atomic energy.

This uncertainty cannot be brought to an end by reference to technological arguments for and against, however important these may be. Uncertainty about the safety aspects can be disposed of not only by knowledge but also by conviction; this conviction can only be created and grow in practice. This imposes limits on the speed of expanding atomic energy. Political responsibility is required.

In view of the advantages, a lot could be said in the Netherlands in favor of a maximum effort regarding atomic energy. This would then be in conformity with the recommendations of the European Commission. Having regard to the present uncertainty, the Minister considers it more important, however, to widen this basis of confidence. The best way to achieve this is by expanding our atomic energy potential at a comparatively slow rate, by creating an installed capacity of about 3500 MW by in or about 1985. This capacity would then correspond to about 20% of the total installed capacity for electricity generation. This cautious approach also has the advantage of being able to utilise only tested techniques. Safety will also be promoted because in this way construction can be brought into alignment with the availability of highly skilled staff. This building programme also ensures the creation of an adequate platform for expansion of atomic energy should this prove necessary if alternative energy sources or new processing methods for fossil fuels prove to make no contribution or merely an inadequate contribution to energy supplies.

On the other hand, this capacity is not so great as to determine completely the structure of electricity production.

The decision in principle to expand the Netherlands' atomic energy capacity for electricity generation so that there would be an effective increase of 3000 MW more nuclear power than at present in or about 1985 is subject to important conditions. They concern the creation of an organisational structure for electricity generation by atomic energy in which the government would have a decisive voice on its essential points. Besides this, a complete risks analysis will have to be made of the entire fissionable matter cycle. In addition, reports will have to be made on the health aspects and environmental effects and also on the safety aspects of the fissionable matter cycle in the Netherlands. The locations of the three prospective 1000 MW nuclear fission power stations will also require futher study as part of the draft Structural

Project for electricity supplies, including the zoning standards that also have to be established. The implementation decisions taken on this basis regarding the abovementioned decision in principle can be phased. In view of the expected actual construction time of about six years and the necessity for the building of the three 1000 MW nuclear power stations to be commenced successively, the contemplated capacity can be achieved in or about 1985, on the assumption of course that the investigations mentioned above do not prompt a more fundamental review of this programme.

A characteristic feature of the decision in principle is that scope is left specifically for drawing conclusions from the studies and activities before the power stations can be constructed. In this way, the government retains the possibility of departing from the expansion programme on important points, to suspend or even stop it.

The quantitative extent of several consequences of the policy decision is particularly important in a number of fields. For instance, extra oil imports of 5 million tons a year are saved, or over one-sixth of the Netherlands' total domestic oil consumption in 1973. It is also avoided that electricity generation in the Netherlands would be dependent on oil to an unacceptably high percentage (77%).

As to the economic and financial implications, the annual cost saving with the three 1000 MW stations in operation, can be estimated at about Fl. 350 million in 1985. When the three nuclear power stations are operating, the benefit to the balance of payment can be estimated at over Fl. 900 million a year. Lastly, the building of these three stations provides additional direct employment of about 12,000 man years in the Netherlands.

Nationally, there must be centralised decision making and primary government responsibility for all major policy aspects concerning atomic energy, in order to bear direct parliamentary responsibility for these. For this purpose, a state monopoly will be created for generating electricity with nuclear energy, by supplementing the Atomic Energy Act. The government will be able to delegate certain powers; with this, it will be able to secure its influence so that its primary responsibility for the use of atomic energy remains intact.

As regards the Kalkar project, reticence has been adopted, leading to a ceiling for the Kalkar fund. With respect to the Kalkar levy, the Minister wishes to add that this policy will limit the funds' importance in time. The limitation on expenditure on the Kalkar project, adopted for the time being pending evaluation of a further SNR report drawn up by the Netherlands Economic Institute (NEI) corresponds with termination of the levy in the course of 1977.

Electricity

Electricity consumption via the public supply system increased from 1963 to 1973 by about 170% to 43,000 million kWh, or a growth of over 10% per annum.

Electricity production took up about 20% of fossil fuel consumption in the Netherlands. Production, and also largely the transmission of electricity for public supplies, is in the hands of 14 generating companies. All of these collaborate in N.V. Samenwerkende Elektriciteits Produktiebedrijven (SEP). Some 75% of the electricity is distributed by these companies; the other 25% by about eighty companies which are non-producing.

The government now has little influence over electricity generating. The Minister believes it necessary that in the future the government should have adequate influence on the Electricity Plan, the organisation of electricity supplies and rating policy.

The SEP coordinates the installation of production capacity and the construction of major high-tension lines, as embodied in the Electricity Plan. It must be regarded as a great deficiency that the government has no authority for approval of this Plan. To meet this deficiency in the near future, the basis for Ministerial approval is being created in the form of an agreement (convention). Under this convention the time, place, extent and fuel consumption of new production units will require Ministerial approval.

Regarding the organization of electricity supplies, the aspects are production and transmission of electricity and its distribution.

In consultation with provincial and municipal authorities, under whose jurisdiction the companies concerned fall, a situation will be aimed at in which the number of producing/distributing companies will be reduced. This, again, may be a case for a convention. Regional grouping does not impede any further future concentration.

As regards the effectiveness of the present distribution system, in which a comparatively large number of companies attend to a small part of distribution, there are justifiable doubts. The Minister believes that restructuring will prove to be possible with the cooperation of those concerned.

In order to arrive at a rates structure that is justifiable both as regards energy policy and economic operation, further agreements will have to be made as regards the rates and also as regards the government's influence on these.

For efficiency considerations there is an effort to set up ever bigger production units because the investment per kW installed capacity is then low. But this has a number of drawbacks concerning local environments, the availability of cooling water and the transmission of electricity. In principle, the Minister is favourably inclined towards total energy and heat-power-linking systems which have the purpose of utilising at least part of the heat released by electricity production.

Partly in view of the environmental aspects, self-generation of electricity will have to be subject to a licensing system.

For electricity transmission, underground cables have advantages for countryside preservation. A further movement towards such cables will be promoted, bearing in mind the relevant technical and economic problems.

From the distribution viewpoint, it would seem necessary for new power stations to be equipped for firing more than one fuel; except, of course, for nuclear power stations. New stations will therefore have to be suitable for burning coal.

Allowing for such factors as electricity requirements, availability of cooling water, the needs of natural, countryside and environmental preservation, the medium-term policy towards electricity supplies will have to be put in a more concrete form in a structural programme for electricity supplies. This programme is now in an advanced stage of preparation.

New energy sources and technologies

As fossil fuels are less able to meet the rising demand for energy, new energy sources will have to become available. In recent decades there has been little technological progress in this respect, and few new sources are available.

Discussion of the possibilities of these alternative sources is at present concerned too much with facets. Every phase of the energy situation requires assessment within the system as a whole. A major contribution towards this is to be expected by the National Steering Group on Energy Research (Landelijke Stuur groep Energie Onderzoek) (LSEO) set up in February this year by the Minister voor Wetenschapsbeleid (Minister for Scientific Policy). This Steering Group's terms of reference include examination of the possibilities of alternative sources for the country's energy supplies. It is generally expected that results of research and development, at least as regards new approaches, will be able to contribute little to the energy economy for the next ten to fifteen years. Longer-term prospects are, however, more favourable.

Theoretically, the nuclear fusion process is attractive, but actual possibilities of using it still have to be demonstrated.

There need be no doubt about the technological possibilities of utilizing energy from sun and wind. Moreover, both sources represent a considerable potential. Despite the fact that the cost factor is unknown, it must be examined how good prospects of their development can be offered in the years ahead.

At this stage, no clearly defined details can be given of the prospective research and development policy. The LSEO will be able to help in ensuring that such a policy takes shape before very long. This Commission is aiming to make a number of recommendations which it believes are of an urgent nature, in an interim report at the end of 1974.

Within the scope of this Paper, it will suffice to draw several tentative conclusions. For the years 1975–1985, no essential contribution can be expected from alternative energy sources. In the period 1985–2000 solar energy (thermal conversion), wind energy and energy from waste may become significant. With the aid of gasification and liquefaction plants, which are likely to become operational at an early date, gaseous and liquid fuels and organic materials for the chemical industry can be made from coal in the same period. After the turn of the century, nuclear fission may join the range of new possibilities.

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