NA-088

Measurement and Valuation of Natural Gas and Oil Reserves in the Netherlands

Marcel Pommée

Statistics Netherlands

Division Presentation and Integration
Sector National Accounts

Voorburg/Heerlen, 1998

NA-088

Measurement and Valuation of Natural Gas and Oil Reserves in the Netherlands

Marcel Pommée

Kengetal: P-30/1998-1

ISSN: 1385 1845

Division Presentation and Integration
Sector National Accounts

Statistics Netherlands

Voorburg/Heerlen, 1998

Statistics Netherlands

Voorburg

Address:
Prinses Beatrixlaan 428

Postal address:
PO Box 4000
2270 JM Voorburg

Telephone 31 (0)70 337 38 00
Fax 31 (0)70 387 74 29

Heerlen

Address:
Kloosterweg 1

Postal address:
PO Box 4481
6401 CZ Heerlen

Telephone 31 (0)45 570 60 00
Fax 31 (0)45 572 74 40

Internet
http://www.cbs.nl

Information desks	*Telephone*	*Fax*	*E-mail*
Central information service	(045) 570 70 70 infoserv@cbs.nl	(045) 570 62 68	
Special topics			
Labour and wages	(070) 337 58 50	(070) 337 59 94	infosec@cbs.nl
Population	(070) 337 58 30	(070) 337 59 87	infosbv@cbs.nl
Construction	(070) 337 42 41	(070) 337 59 75	infolbn@cbs.nl
Consumer price index (inflation)	(070) 337 58 09	(070) 337 59 94	infosec@cbs.nl
Culture, tourism and recreation	(070) 337 58 67	(070) 337 59 96	infokcr@cbs.nl
Manufacturing	(045) 570 76 17	(045) 570 62 77	infolin@cbs.nl
International Trade	(045) 570 79 17	(045) 570 66 75	infohih@cbs.nl
Agriculture	(070) 337 58 03	(070) 337 59 51	infollb@cbs.nl
Environment	(070) 337 58 96	(070) 337 59 76	infolmi@cbs.nl
Education	(070) 337 53 45	(070) 337 59 78	infosoz@cbs.nl
Government	(070) 337 58 99	(070) 337 59 80	infokov@cbs.nl
National Accounts	(070) 337 58 76	(070) 337 59 81	infopni@cbs.nl

Verklaring der tekens

.	= gegevens ontbreken
*	= voorlopig cijfer
x	= geheim
-	= nihil
-	= (indien voorkomend tussen twee getallen) tot en met
0 (00)	= het getal is minder dan de helft van de gekozen eenheid
niets (blank)	= een cijfer kan op logische gronden niet voorkomen
1996-1997	= 1996 tot en met 1997
1996/1997	= het gemiddelde over de jaren 1996 tot en met 1997
1996/'97	= oogstjaar boekjaar schooljaar enz. beginnend in 1996 en eindigend in 1997
1986/'87-1996/'97	= boekjaar enz. 1986/'87 tot en met 1996/'97

In geval van afronding kan het voorkomen dat de totalen niet geheel overeenstemmen met de som der opgetelde getallen.
Verbeterde cijfers in staten en tabellen zijn niet als zodanig gekenmerkt.

Explanation of symbols

	= data not available
*	= provisional figure
x	= publication prohibited (confidential figure)
-	= nil
-	= (between two figures) inclusive
0 (00)	= less than half of unit employed
a blank	= category not applicable
1996-1997	= 1996 to 1997 inclusive
1996/1997	= average for the years 1996 up to and including 1997
1996/'97	= crop year financial year school year etc. beginning in 1996 and terminating in 1997
1986/'87-1996/'97	= book year etc. 1986/'87 up to and including 1996/'97

Detailed items in tables do not necessarily add to totals because of rounding.
Revised figures are not marked as such.

How and where to order

Obtainable from Statistics Netherlands,
Sales Department
PO Box 4481
6401 CZ Heerlen, The Netherlands.
Telephone: 31 45 570 79 70
Fax: 31 45 570 62 68
E-mail: verkoop@cbs.nl

Abstract

This paper discusses some conceptual and methodological issues related to the estimation of reserves of natural gas and oil. The first section focuses on these subsoil assets in relation to the 1993 SNA. The second section deals with the situation and valuation of these assets in the Netherlands. The valuation method applied may be of special interest because of its simplicity and modest data requirements.

Table of Contents

1. Introduction

The 1993 System of National Accounts (SNA) emphasises the importance of the compilation of a complete set of Integrated Economic Accounts (institutional sector accounts), including the opening and closing stocks of assets and liabilities (balance sheets)[1]. Chapter XIII of the 1993 SNA discusses the conceptual framework related to the balance sheets and gives some recommendations for their compilation. In line with these new developments, Eurostat has recommended to make balance sheets available from 2001 onwards for all member states of the European Community (starting with the financial balance sheets and fixed assets for the period 1995-99). Under the auspices of Eurostat various working groups are now active to further the work on balance sheets, such as the Financial Accounts Working Party (for financial accounts and corresponding balance sheets), and Task Forces on Water, Forests and Subsoil Assets.

In this context, the Netherlands has recently completed a tentative set of balance sheet estimates for the national economy as well as the government sector for the beginning and end of 1990. These estimates encompass detailed specifications of financial assets and liabilities and produced and non-produced assets according to the recommendations of the 1993 SNA. Current work is geared towards the compilation of time-series and the estimation of balance sheets as an integral part of the annual compilation cycle [2].

This paper is much more limited in its focus , it only deals with subsoil assets, especially reserves of natural gas and oil. Substantial reserves of natural gas occur onshore in the north of the Netherlands and (for a minor part) below the continental shelf. The reserves of oil are much smaller [3]. The second section discusses the treatment and recommendations with respect to subsoil assets in the 1993 SNA. It is argued that the stock concept would become more realistic if it includes the probable and possible reserves in addition to the proven reserves. The former should then be weighted by their probability of being recoverable. The third section discusses in more detail the treatment and valuation of the natural gas and oil reserves in the Netherlands, focusing in particular on issues related to the stock concept, the valuation method and ownership. Especially the valuation method utilised in the Netherlands may be of interest to others because of its simplicity and modest data requirements.

---

[1] United Nations, 1993, System of National Accounts 1993 (SNA), CEC-Eurostat, IMF, OECD, UNO, World Bank, Brussels/Luxembourg, New York, Paris, Washington D.C., ISBN 92-1-161352-3.

[2] See, Pommée, M., and W. Baris, 1996, Balance Sheet Valuation: Produced Intangible Assets and Non-Produced Assets, National Accounts Occasional Paper Series Nr. NA-81, Statistics Netherlands, Voorburg.

[3] In addition to natural gas and oil, reserves of coal are found in the south of the Netherlands, but their exploitation is economically not viable anymore. The few non-metallic mineral reserves mainly consist of salt deposits and various quarrying products. Metallic ores are not found in the Netherlands.

2. The 1993 SNA and Subsoil Assets

The 1993 SNA discusses the treatment and valuation of subsoil assets within the overall framework of the balance sheets and the integrated economic accounts (see chapter XIII). The recommendations in this context can be briefly summarised as follows: subsoil assets are defined as proven reserves of mineral deposits and should be valued on the basis of the net present value of the future returns, using a rate of discount which is derived from information based on transactions in these assets. Furthermore, in line with usual practises, subsoil assets are recorded on the balance sheet of the legal owner [4].
Although these recommendations seem fairly simple and straightforward, their practical implementation is not without difficulty, and in many cases some elaboration or even modification is necessary. This is discussed below.

2.1 Stock Concept

Concerning the stock concept, it appears that in natural resource accounting various categories of reserves are usually distinguished, in order to grasp their magnitude and potential of being recoverable. In addition to proven stocks, it is common practice to distinguish probable and possible reserves and to specify their probability of being recoverable. Depending on the state of the extraction technology and relative prices, only a part of these reserves is economically exploitable.
Given the above considerations, the Netherlands has opted for a somewhat broader stock concept than is utilised in the SNA, that is including not only the proven reserves, but also the probable and possible reserves weighted by their probability of being recoverable. This broader concept yields a more realistic estimate of reserves of natural gas and oil, and is also in line with recent findings of Eurostat's Task Force on Subsoil Assets and research of the Australian Bureau of Statistics[5]. This broader concept of reserves also matches current reporting practices in the Netherlands.
It should be mentioned that even this broader concept of reserves may underestimate the total quantities available. This is because exploration activities

[4] Subsoil assets are defined in the SNA as: "proven reserves of mineral deposits located on or below the earth's surface that are economically exploitable, given current technology and relative prices. Ownership rights to the subsoil assets are usually separated from those to the land itself. Subsoil assets consist of coal, oil and natural gas reserves, metallic mineral reserves and non-metallic mineral reserves" (SNA, p. 309). The SNA further defines the coal, oil and natural gas reserves as: "anthracite, bituminous and brown coal deposits; petroleum and natural gas reserves and fields" (SNA, p. 310).

The SNA recommends to value these subsoil assets on the basis of the net present value of the future returns: "the value of the reserves is usually determined by the present value of the expected net returns resulting from the commercial exploitation of those assets, although such valuations are subject to uncertainty and revision. As the ownership of subsoil assets does not change frequently on markets, it may be difficult to obtain appropriate prices, which can be used for valuation purposes. In practice, it may be necessary to use the valuations which the owners of the assets place on them in their own accounts" (SNA 13.60).

Concerning the rate of discount the SNA states: "the rate of discount and the capitalisation factors should be derived from information based on transactions in the particular type of assets under consideration - forest lands, mines and quarries - rather than using a general rate of interest, such as one derived from the yield on government bonds" (SNA 13.34)

[5] The Eurostat Task Force on Subsoil Assets has prepared several (unpublished) progress reports and minutes. These reports are available from Eurostat, Directorate B: Economic Statistics and Economic and Monetary Convergence, Unit: Quarterly Accounts and Environment Accounts.

The Australian Bureau of Statistics also utilises a broad interpretation of the concept of proven reserves as it uses the concept of "economic demonstrated resources": those resources whose geological assurance is demonstrated (i.e. the sum of measured and indicated resources) and for which extraction is profitable over the life of the mine (Australian Bureau of Statistics, 1995 National Balance Sheet for Australia, Issues and Experimental Estimates 1989 to 1992, Occasional paper, Canberra).

are very costly and usually geared towards finding new fields in order to secure continuity of exploitation in the short and medium term rather than establishing an estimate of the overall stock. Therefore, in the Netherlands' situation the reserves of oil and gas have remained fairly constant for a large period, as annual depletions are more or less matched by new finds.

2.2 Valuation

With respect to the valuation of the reserves of natural gas and oil, the Netherlands has opted for discounting the expected specific revenues of the government related to the extraction of natural gas and oil, as an approximate of the expected net future returns recommended in the SNA. In this context, it is assumed that the net returns (revenues less cost, including a normal remuneration of financial capital) on the exploitation of these assets are appropriated by the government in the form of specific revenues (license fees and concessions). Private corporations, of course, generate profits from the exploitation of natural gas and oil, but these profits are considered as a normal return on invested capital. In other words, negotiations between government and private corporations about these specific revenues related to the exploitation of natural gas and oil, are assumed to have resulted in a situation where returns to the private corporations (the concession holders) are equal to the normal return in this kind of activity. This way of valuing subsoil assets is attractive because of its simplicity and modest data requirements. Estimates of the specific revenues in the current and following years are normally available from the Government Budget.

On the other hand, a valuation based on the recommendations of the 1993 SNA puts much more demand on the data system. The net returns in this context are defined as the revenues (extracted quantities times well-head prices) less extraction costs (including remuneration for labour), consumption of fixed capital and a normal return to invested capital. In the case of the Netherlands, current estimates of quantities and well-head prices are available from annual surveys, but estimates of extraction costs are based on extrapolations of rough source data and therefore not very reliable. Moreover, estimates of a normal return to capital are difficult to establish and data for future years are hardly available at all[6].

2.3 Rate of discount

Concerning the rate of discount, the 1993 SNA advocates to use a specific rate based on information on transactions in the type of assets under considerations, in this case oil and natural gas. But as there are hardly any transactions in these assets, a specific discount rate is very difficult to determine.

Conceptually, the discount rate should reflect the holders' time preference (taken into account the rate of inflation) as well as all the risks associated with owning the reserves (ranging from expropriation to quality and price risks). Such a discount rate would clearly be substantial.

The situation in the Netherlands is somewhat more complex, as the reserves of oil and gas are not really sold from one party to another. The government is by law the original owner of subsoil assets, but the ownership of reserves is transferred to the oil corporations as part of the compulsory exploitation licences. So, the oil corporations do not in fact pay for the reserves (they rather pay specific taxes when selling the oil to third parties) and as such do not run real risks by holding them. The discount rate should, therefore, reflect only the time preference of the holders.

In the case of the Netherlands, a moving 10-year average of the long term (nominal) interest rate on government bonds has been taken as a proxy of this discount rate (about 8 per cent). A moving average has been used to reduce the

[6] For an overview of the various approaches taken to compute the return to capital see: Born, A., 1997, Valuation of Subsoil Assets in the National Accounts: A Summary of Key Issues, National Accounts and Environment Division, Statistics Canada, Paper presented at the London Group on Natural Resource and Environmental Accounting, Ottawa.

fluctuations in the value of the reserves due to variations in the discount rate. More recently, a study of the Netherlands' Ministry of Finance recommended to use a real discount rate of 4 per cent for uniformly comparing and evaluating government projects. Both discount rates are used in the estimations (see section 3.2).

2.4 Ownership issues

The SNA recommends to record the oil and natural gas reserves on the balance sheet of the legal owner. This implies that the reserves have to be registered on the balance sheets of the oil corporations, as the government has transferred the ownership to them by granting them the exploitation rights. In the annual reports of the oil corporations, the reserves are indeed recorded as assets (and registered as pro memory items on the balance sheet).

However, in the current practice, it is assumed that the government is the owner of the reserves, as the specific revenues from oil and natural gas are recorded as rents on subsoil assets (as part of property incomes) on the accounts of the government (by definition property incomes accrue to the proprietor). So there is apparently a difference between the recommendations of the 1993 SNA and the practice in the Netherlands.

From a legal point of view, it can be said that the oil corporations are clearly the owners of the reserves. From an economic point of view, however, it may be argued that the government holds an asset related to the reserves, as the net (future) returns from the reserves actually accrue to the government in the form of legal shares in the revenues of the oil companies (license fees and concessions).

Given the above considerations, it has been decided to record the reserves on the balance sheets of the oil corporations, but at the same time to impute a financial liability (of similar value) to reflect the discounted future revenues from natural gas and oil to be paid to the government (the amount will, of course, appear as a financial asset on the government balance sheets). Changes in the value of the reserves are then exactly matched by changes in the financial liability (and are recorded in the other changes in the volume of assets account). The government revenues from natural gas and oil are still recorded as property incomes (but now related to the financial asset).

3. Natural Gas and Oil Reserves in the Netherlands

This section discusses the measurement and valuation of natural gas and oil reserves in the Netherlands. The first subsection discusses the stock concept utilised. Subsection 3.2 elaborates on the valuation method used and subsection 3.3 discusses the results in relation to practical work pursued in this respect by the Netherlands' Ministry of Finance and the Ministry of Economic Affairs.

3.1 Stock Concept

Quantity data on reserves and exploitation of natural gas and oil have been based on various geological surveys pursued by the Geological Survey of the Netherlands (RGD) and published annually in "Oil and Gas in the Netherlands: Exploration and Production" (Ministry of Economic Affairs, Directorate-General for Supply of Energy). This publication discusses various stock concepts, but considers the concept of remaining expected reserves the most realistic for estimating the reserves of recoverable natural gas and oil: i.e. the estimated volume of hydrocarbons in a reservoir ultimately recoverable less the cumulative production from the reservoir before the end of the year under review. This stock concept compares with the proposed concept by Eurostat's Task Force on Subsoil Assets, which encompasses proven, probable and possible reserves, weighted by their probability of being recoverable [7].

This broader interpretation of stocks seems more realistic than the concept of proven reserves recommended in the SNA. In addition, however, as has already been mentioned in section 2.1, new finds have to be taken into account as well. In practice, because of these new finds (matching more or less the depletion), the lifetime of the reserves tends to be fairly constant over the last decennia.

In an earlier study on the valuation of oil and gas reserves in the Netherlands (see note 2), the estimations of the expected lifetime of the reserves did not include these new finds (and were therefore somewhat underestimated). On the basis of information on remaining expected reserves and annual production estimates, the reserves of oil were somewhat conservatively estimated to have a lifetime of about 17 years in 1989 and 16 years in 1990. Analogously, the reserves of natural gas were expected to last for about 22 years in both 1989 and 1990 (see Plan of Gas Supply and the annual reports of Dutch Gas). The estimates appear in table 1.

In the current practice, the new finds are indeed included in the estimates of the expected lifetime of the reserves. Following the Plan of Gas Supply of Dutch Gas, a lifetime of 25 years is used for both oil and gas (based on the plan period of the Plan of Gas Supply). The residual reserves, those remaining after 25 years, are not valued. This leads again to an underestimation of the value of the oil and gas reserves, but the amounts involved are relatively small because of the huge discount factor. Moreover, it can be said that because of the uncertainties regarding the new finds, in terms of number of fields and quantities, it may be good practice to be somewhat conservative with respect to the lifetime.

3.2 Valuation Method

Valuation of the reserves of natural gas and oil is pursued on the basis of the net present value of the expected specific (tax) revenues by the government from natural gas and oil, as an approximate of the expected net future returns recommended in the SNA. This method is based on the assumption that these specific government revenues are more or less equivalent to the net returns

[7] Nevertheless, estimates of proven reserves are also available from the Geological Survey of the Netherlands. These are based on somewhat more conservative assumptions of the quantities of hydrocarbons extractable from a reservoir (and are therefore about 7 per cent lower than the estimates of the expected reserves utilised here).

(revenues less cost, including a normal remuneration of financial capital) of the enterprises involved in the exploitation of natural gas and oil. The equivalence between government revenues and the net returns of enterprises is the result of negotiations between the government and the enterprises. In these negotiations the enterprises aim to maximise their profits, while the government tries to maximise their specific tax incomes from oil and gas. If the government revenues were lower, the enterprises would initially witness a windfall profit. But this windfall profit would in turn disappear because wage demands would be higher or because selling prices would be lower (due to consumer pressure) [8]. The government would also be pressed to come up with better results in following negotiations.

The expected specific revenues from natural gas appear in the annually published National Budget and predominantly consist of legal shares in the revenues of two enterprises ("Nederlandse Aardolie Maatschappij" and "Energie Beheer Nederland"). The revenues of oil are comparably much smaller and mainly consist of license fees and concessions ("Opbrengsten mijnwetgeving").

The National Budget of 1990 contains estimates for the expected revenues of gas and oil for the years 1990 to 1994. As the total reserves of natural gas are sufficient for 25 years (see above), the revenues for 1994 have been applied to the remaining years (20) in order to obtain estimates of total revenues. Similarly, the National Budget of 1991 estimates the expected revenues from 1991 to 1995, so that, the revenues for 1995 have been applied to the remaining years. A similar procedure has been applied for estimating the future revenues of oil.

The estimated revenues of gas and oil which appear in the National Budget are regularly up-dated and revised. In the compilation process of balance sheet data, these revisions are taken into account as far as they concern estimates of current and subsequent years. However, the revisions are not included when they concern estimates of past years, as they are based on ex-post information (i.e. information that was not available at the time to which the balance sheet refers), while the national accounts are in principle based on ex-ante information (especially because actors take decisions on the basis of ex-ante information).

The expected revenues in current prices and the corresponding present values appear in table 2. The rate of discount rate has been set equal to the moving 10-year average of the long term (nominal) rate of interest for the first five years as forecasted in the National Budget. This rate is in fact equivalent to the interest on long term government bonds, and amounts to 8.0 per cent in the period 1981-1990 and 7.8 per cent in the period 1982-1991 (derived from the Statistical Bulletin published by Statistics Netherlands). Moreover, for the remaining production period (20 years), a real discount rate of 4 per cent has been applied (in accordance with the official recommendations of the Netherlands' Ministry of Finance: Governments' Standpoint ; Reconsidering the Discount Rate). The application of two discount rates is justified by the valuation in current prices of the expected revenues for the first five years and the implicit valuation in constant prices of the expected revenues in the remaining production period (which have been set equal to expected revenues of the last year forecasted in the National Budget).

3.3 Further Developments

The sources and estimation methods for the valuation of natural gas and oil reserves have been extensively discussed with the Netherlands' Ministry of Finance and the Ministry of Economic Affairs. These agencies nowadays utilise an almost similar methodology, and publish the value of the natural gas and oil reserves as part of the annual Government Balance Sheet. From now on, these estimations will be used by Statistics Netherlands for inclusion in the National Accounts.

The estimation method of the Ministry of Economic Affairs is somewhat more detailed and refined than presented here, as they use specific information on the yearly production of oil and natural gas per field and the corresponding

[8] See also Keuning, S.J., 1996, "The NAMEA Experience: An Interim Evaluation of the Netherlands'; Integrated Accounts and Indicators for the Environment and the Economy", paper presented at the International Symposium on Integrated and Economic Accounting in Theory and Practice, Tokyo, March 5-8, 1996.

government yields (per field for all years). These yields differ per field as they are the result of negotiations between the government and the enterprises, oil and gas prices and the exchange rate of the Dutch guilder vis-á-vis other currencies. For the first five years the expected government revenues are valued in current prices, while for the following 20 years the prices and exchange rates are kept constant. Hence the use of nominal discount rate for the first five years (interest rate on long term government bonds) and a real discount rate (4%) for the latter period.

Finally, it is observed that the real discount rate is rather low and especially applicable to estimations of net revenues which already take into account potential risks and uncertainties (see Ministry of Finance: Governments' Standpoint; Reconsidering the Discount Rate). Obviously, the above estimations of expected revenues cannot include all potential hazards and adversities, but it can be said that determination of the various variables normally takes place on a somewhat conservative basis.

References

Australian Bureau of Statistics, 1995 National Balance Sheet for Australia, Issues and Experimental Estimates 1989 to 1992, Occasional paper, Canberra.

Born, A., 1997, Valuation of Subsoil Assets in the National Accounts: A Summary of Key Issues, National Accounts and Environment Division, Statistics Canada, Paper presented at the London Group on Natural Resource and Environmental Accounting, Ottawa.

Eurostat, 1996, European System of Accounts 1995, Luxembourg.

Joisce, J., 1995, Natural Resources in the Balance Sheet: What are They and What do They Mean, Australian Bureau of Statistics, Paper presented at the Joint OECD/ENECE Meeting of National Accounts Experts, Paris.

Keuning, S.J., 1996, "The NAMEA Experience: An Interim Evaluation of the Netherlands'; Integrated Accounts and Indicators for the Environment and the Economy", paper presented at the International Symposium on Integrated and Economic Accounting in Theory and Practice, Tokyo, March 5-8, 1996.

Ministry of Economic Affairs, National Budget 1991, Chapter XIII (Rijksbegroting 1991, Hoofdstuk XIII), SDU publishers, The Hague, ISBN 9012069130 and ISSN 0921-9587.

Ministry of Finance, 1995, Governments' Standpoint ; Reconsidering the Discount Rate (Kabinetsstandpunt Heroverweging Disconteringsvoet).

Pommée, M., and W. Baris, 1996, Balance Sheet Valuation: Produced Intangible Assets and Non-Produced Assets, National Accounts Occasional Paper Series Nr. NA-81, Statistics Netherlands, Voorburg.

United Nations, 1993, System of National Accounts 1993 (SNA), CEC-Eurostat, IMF, OECD, UNO, World Bank, Brussels/Luxembourg, New York, Paris, Washington D.C, ISBN 92-1-161352-3.

Tables

Table 1: Natural gas and oil: volumes

	Balance Sheet 1990	
	January 1	**December 31**
	mln m3	
Remaining expected reserves (total)	1933	2177
- Natural gas	1865	2113
- Oil	68	64
	1989	**1990**
Production (total)	75.7	76.3
- Natural gas	82.0	94.0
- Oil	3.8	3.9

Sources: Oil and Gas in the Netherlands: Exploration and Production 1993,Ministry of Economic Affairs, Directorate-General for Supply of Energy, for estimates of remaining expected reserves and production of oil, and, Plan of Gas Supply 1990 and Annual Report 1991, Dutch Gas ("Gasunie"), for estimates of future production of natural gas.

Table 2: Natural gas and oil: revenues

	1990	1991	1992	1993	1994	1995	1995-2014	1996-2015	Total
Revenues of natural gas									
	Mln dfl								
National Budget 1990:									
- Current values	4100	4182	4182	3939	3858		77160		97421
- Present values 01/01/1990	3796	3585	3320	2895	2626		43095		59317
National Budget 1991:									
- Current values		4900	4818	4408	4326	3606		72120	94178
- Present values 31/12/1990		4545	4146	3519	3203	2477		40280	58171

	1990	1991	1992	1993	1994	1995	1995-2014	1996-2015	Total
Revenues of oil									
	Mln dfl								
National Budget 1990:									
- Current values	980	998	998	941	897		17940		22754
- Present values 01/01/1990	907	856	792	692	610		10020		13877
National Budget 1991:									
- Current values		1080	1062	972	954	998		19960	25026
- Present values 31/12/1990		1002	914	776	706	686		11148	15232

Source: National Budget 1990 and 1991, Chapter XIII Economic Affairs, Section 06.00 Energy policy, Paragraph 06.01 Income from Natural gas.
Note: the revenues of oil are derived from the National Budget for the years 1990 and 1991. As these data are not available for subsequent years, the proportion of oil revenues in total estimated revenues of natural gas and oil has been kept constant.

Related publications **(translated)**

National accounts (incl. diskette)	P-2	ƒ 75,00
The Dutch Economy	P-19	ƒ 32,50
Social security, pension insurance, life insurance	P-6	ƒ 15,00
Quarterly accounts (subscription)	P-14	ƒ 49,50
Quarterly accounts on diskette (subscription)		ƒ150,00
Business Cycle report, monthly annex to the Statistical Bulletin Subscription Statistical Bulletin	A-1	ƒ125,00
Regional economic annual data	P-11	ƒ 67,50
Methods and research		ƒ 10,00

All these publications are in Dutch only, except for the Quarterly accounts on diskette and the National accounts

A large number of the above mentioned publications can be consulted in the libraries of Statistics Netherlands at Voorburg (direct line +31 70 337 5151) or Heerlen (direct line +31 45 570 71 87).

List of occasional papers

The list below will give an impression of the subjects covered in previously published Occasional papers. A complete list of all available Occasional papers can be obtained from the National accounts information desk (telephone 31 70 337 58 76; fax 31 70 337 59 81; e-mail infopni@cbs.nl).

NA/81 **Balance sheet valuation: produced intangible assets and non-produced assets, Pommée, Marcel and Willem Baris (1996).**
This paper deals with the estimation of opening and closing stocks of produced intangible assets such as mineral exploration, computer software and artistic originals and non-produced assets such as land, subsoil assets, patented entities and purchased goodwill. The first section elaborates on the main conceptual issues related to the compilation of stock data such as the asset boundary, the relation between flows and stocks and principles of valuation. The following sections discuss each of the asset categ ories in detail.

NA/82 **Micro-meso-macro linkage for labour in Th e Netherlands, Leunis, Wim P. and Jolanda G. Timmerman (1996).**
This paper describes recent developments in the area of labour market statistics and shows the advantages of integrating these data in the system of Labour accounts and in Social Accounting Matrices. The benefits of such integrated information surpasses the sum of the benefits of various source data. A subs equent effort to adjust the micro data and aggregate figures increases the possible uses of statistics even further.

NA/83 **The interaction between national accounts and socio-economic policy, Keuning, Steven J. (1996).**
This paper addresses the interaction between national accounts and socio-economic policy formulation. In the Netherlands, this interaction mainly occurs through the widespread application of formal economic modelling. Lately, ho wever, the domestic use of national accounts figures swells because of their growing relevance to policy-making and because the Netherlands' national a ccounts incorporate all kinds of social and environmental data.

NA/84 **The future of the national accounts, Bos, Frits (1996).**
This paper investigates the consequences of globalisation, European unification, automation and more market-oriented government for the national accounts as a central international overview-statistic on national economies. The perspective on the future is a mixture of exploiting present and new potentials and coping well with dangers.

NA/85 **Accounting for the use of financial capital as an input in production; with an application to multi-factor productivity change estimation, Keuning, Steven J. and Ted Reininga (1997).**
It is increasingly acknowledged that the financial structure of a firm is an i mportant determinant of its economic activity. Therefore, the use of financial capital should be seen as a separate input in the production process. This paper attempts to operationalise a meso-economic measurement of financial capital inputs in production and shows the consequences for the estimation of multi-factor productivity change. This approach establishes a much closer relationship of macro-economic accounting and analysis to business economics

NA/86 **Volume measurement of government output; the Dutch practice since revision 1987, Kazemier, Brugt (1997).**
In 1992, Statistics Netherlands published the first results of a major revision of national accounts statistics. Part of this revision was the introduction of an a lternative method to estimate the volume change of government output. This paper briefly describes this alternative method and the results of the revision with respect to the volume change of government services.

NA/87 **Chain indices in the national accounts: the Dutch experience, Boer, Sake de, Jan van Dalen and Piet Verbiest** (1997).
In this paper we discuss the use of chain indices in the Netherlands. In Dutch practice chain indices are applied from 1980 onwards. Chain indices are a good base for the construction of economic models, since changing weights guarantee a near approximation of actual developments and the actual economic structure. However, special attention should be paid to the tuning of the model to the characteristics of the data and to the presentation of model results to the public.