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TAKING THE ENVIRONMENT INTO ACCOUNT:
the Netherlands NAMEA's for 1989, 1990 and 1991

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Abstract

The National Accounting Matrix including Environmental Accounts (NAMEA) contains figures on environmental burdens in relation to economic developments as reflected in the National accounts. NAMEA's for the Netherlands in 1989, 1990 and 1991 have now been completed. These environment satellite systems have been extended from the pilot version presented in De Haan et al. (1993). They include a more detailed industrial classification and a series of environment taxes and levies, plus environmental protection expenditures by industry and households. Further, the depletion of two important mineral resources in the Netherlands is now incorporated in the NAMEA's. The concepts have largely remained unchanged.

In the NAMEA existing national accounts matrices have been extended with accounts in physical units. On the basis of the expected contribution of each substance to a particular environmental problem, emissions are converted to theme equivalents. This results in six summary environmental indicators. The satellite accounts contain consistent data for the economy and the environment, so that summary economic and environmental indicators can be based on one meso-level information system.

Section two contains a brief methodological discussion. The third section of this paper presents the results of the Netherlands' NAMEA's. The contribution of industry branches and households to a number of main environment problems is compared with their contribution to GNP, employment and consumption expenditure. Changes between 1989 and 1991 of economic and environmental indicators are also presented. Furthermore, the expenditures on environmental prevention are compared with changes in outputs of pollutants in this period.

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1. Introduction

In general, the value of commodities in the System of National Accounts (SNA) is based on actual payments and receipts for these commodities on markets. In this way receipts always equal outlays, an important accounting practice that will guarantee the system's consistency. This valuation method reflects the revealed preferences on markets and the preferences for collective goods as the outcome of (democratic) decision making processes. The registration of pollution in the National accounts is based on this same starting point. If polluting companies are not actually charged for the resulting damage on the environment, there are no costs subtracted from Gross Domestic Product (GDP). These social burdens are in reality not actually paid for by anyone and thus not subtracted from factor payments to employees and capital suppliers of polluting companies. Analogously, free use of environmental functions, like swimming in a clean sea, does not lead to an increase in GDP.

It can be concluded that the core SNA contributes to the understanding of the development of welfare, but does not provide a complete picture. Besides the unpaid use of environmental functions, the SNA does not provide information on unpaid household labour and leisure time. On the other hand, other welfare aspects such as Net National Income, employment and social security payments are imbedded in the system. All these aspects are however not reflected in one single indicator, for instance by adjusting National income for unemployment. In extended tables, the National accounts can be expanded with non monetary data on aspects of welfare, whereby for each aspect of welfare an indicator can be formulated. Changes in indicators can then subsequently be compared in overview tables. Examples can be found in Tables 2 and 3 of this paper.

At this moment the Netherlands' System of National Accounts is expanded in two directions. On the one hand, a Social Accounting Matrix (SAM) is compiled in which the personal income distribution, and the demand and supply of different categories of labour (by sex and education level) are embedded in the system (see Timmerman and Van de Ven 1994). On the other hand, a connection is made to statistics on the environment in a so called National

Accounting Matrix including Environmental Accounts (NAMEA). Besides data on the economy, the NAMEA contains detailed information on the environment and converts this into a number of summary environmental indicators. Indicators on the economy and the environment are in this way reflected in a single accounting system. This is elaborated in the next section.

2. An aggregated NAMEA

In the NAMEA, the National Accounting Matrix is extended with three accounts on the environment. An substances account (account 11 in the Tables A1, A2 and A3 in the annex), an account for global environmental themes (account 12) and an account for national environmental themes (account 13). These accounts do not express transactions in money terms but include information on the environment as it is observed in reality: that is in physical units. In this part of de NAMEA, not only pollution generated by producers and consumers is presented, but for instance also the immission of hazardous agents in the Dutch environment: the domestic output of pollutants plus the balance of trans-boundary pollutant flows from and to other countries. In this statistical matrix, the value of these flows of pollutants, expressed in guilders is equal to the actual value in the economic system, namely zero. In the environmental accounts these trivial values are not reflected, but replaced by the corresponding physical units.

The other accounts in the NAMEA contain a brief overview of the regular transactions in the National Accounting Matrix (cf. Keuning and de Gijt, 1991). Sometimes, actual transactions which are of environmental concern, are isolated and explicitly shown (see for instance account 1a in the tables A1, A2 and A3). In the NAMEA, receipts are reflected in the rows and outlays in the column, just like the National Accounting Matrix (see also the National accounts 1993, p. 228). Most of the accounts contain a balancing item in the column. These items are determined by the difference between total receipts minus total outlays and are doubly framed in the columns of the accounts in the tables A1, A2 and A3. In this way, column and row totals are equal for each account, a rule that guarantees the consistency of the accounting system. In order to emphasize the fact that money units and physical units cannot be added up, the physical units are positioned higher in the rows, and more to the left in the columns of the accounts 2,3,6 and 9. The tables A1, A2 en A3 are aggregated presentations of NAMEA's for the years 1989, 1990 and 1991. The last part of this section gives a short elucidation of these tables.¹

1. For a more detailed conceptual discussion, see De Boo et al. (1991) and Keuning (1992). De Haan et al.(1993) provides a more elaborate insight in the sources and methods for the actual compilation of the NAMEA for the Netherlands.

The first row and column contain the goods and services account. The intermediate and final use are presented in the row and total domestic and foreign supply is presented in the column. Environmental cleansing services are reflected separately. In the NAMEA two types of cleansing services are distinguished: internal and external environmental cleansing. External cleansing services are sold to other kind-of-activity units (intermediate consumption) or to households (private consumption). These services are considered as production in the National accounts. An example is collection and incineration of waste by cleansing companies. Internal environmental cleansing services are produced by the same activity unit that uses this service within its own production process. These internal services are in the national accounts considered neither as production nor intermediate consumption. In order to express the financial burdens on behalf of the environment within different industries, these expenditures are explicitly shown in the NAMEA. Therefore, production as well as intermediate consumption are higher in the NAMEA than in the standard national accounts, but Net Domestic Product (NDP) and concomitantly all other balances do not change. A more detailed presentation of environmental cleansing services can be found in table 4 of this paper. The column of the goods and services accounts contains taxes on products (VAT, other taxes on products etc.) and trade and transport margins. Both of them make up the difference between the payments of users and the receipt of producers.

The second account is a specific consumption account which re-allocates consumption purchases (matrix 1,2) to consumption purposes (vector 2,5). The latter are connected to specific pollution patterns (2,11). Consumer goods that are purchased in order to protect the environment are presented separately. An example of this kind of expenditures are the extra costs of cars fitted with catalytic converters. These expenditures reflect the outlays of households for the protection of the environment (cell 2a,5).

The third account shows in the row the production of goods and services, and in the column the intermediate use and value added. Consumption of fixed capital is directly reflected in the production account (cell 6,3), so that the balancing item in cell (4,3) equals to Net Domestic Product (NDP) at factor costs. In row 3 the production of goods and services is expanded with

the concomitant emissions of un-priced pollutants (row-vector 3,11). The Tables A4, A5 and A6 give detailed information on the emitted agents classified by branches of industry. Vector (11,3) contains information concerning a number of inputs in production processes for which no money is paid, and these are thus measured in physical units. Examples of these inputs are the extraction of natural resources and the amount of waste processed in incineration plants. The emissions of waste incineration plants are again taken into account in row-vector (3,11). In the future, recycling of waste can also be reflected in vector (11,3). At this moment sufficient data on the destination of this waste is not available.

The fourth row contains different components of NDP (wages, salaries, social contributions and operating surplus) increased by wages and salaries from abroad. In the column of this account, this income is distributed over institutional sectors in the economy (financial and non financial corporations, households and general government etc.) and to the rest of the world. In the fifth account income is (re-)distributed and used for consumption and saving. In account 6 net saving is converted into the formation of (fixed) capital. Finally, net lending from and to the rest of the world results in row account 7. By definition, these totals add up to zero. Therefore the presentation of an (empty) column is not necessary.

Account 8 of the NAMEA is a separate tax account in which a variety of taxes are presented, such as taxes (minus subsidies) on products in sub-matrix (8,1), taxes on production in vector (8,3) and taxes on income in vector (8,5). The environmental taxes in the detailed NAMEA, such as energy levies, levies on pollution of surface waters and levies on waste water drain offs are presented separately. The collection of governments' tax receipts is reflected in the column of the tax account (row-vector 5,8 and cell 9,8b).

Accounts 9 and 10 represent transactions with the rest of the world. The row of the current account (9) contains not only actual expenditures such as imports of goods and services, but also the amount of pollution that is entering the Netherlands by way of rivers or air. In the column, outlays such as exports are presented, as well as the export of pollutants to other countries. Unfortunately, trans-boundary flows of waste are still missing due

to lack of data. Cell (10,9) reflects the external balance of payments, that is of the rest of the world with the Netherlands. From the point of view of the rest of the world, this balance is negative. The figures show that the Netherlands managed to create a trade surplus for commodities as well as for pollutants.

Account 11 registers in the column the origin of ten types of pollutants. This pollution is caused by producers (row-vector 3,11), consumers (row-vector 2,11) and the rest of the world (vector 9,11). The row of this account presents the extraction of the natural resources oil and gas and as well the absorption of pollutants in the economic process. This concerns for instance, waste incineration (vector 11,3). Other changes in stocks of resources are reflected in row-vector (6,11). These changes reflect discoveries or shifts in economic reserves as a result of changes in market prices. The rest of the pollutants is exported to other countries (vector 11,9), or is re-allocated to five environmental themes (sub-matrices 11,12 and 11,13). The use of natural resources is allocated to a sixth theme: natural resource depletion. Account 11 is expressed in kilograms or in (peta- or) terajoules. Of course the row and column totals of account 11 are equal.

The so-called 'environmental themes' as presented in account 12 and 13 are adopted from the Netherlands' National Environmental Policy Plan (VROM, 1993). Environmental themes are used as an inventory framework of current environmental issues in the Netherlands. The column totals of account 11 reflect a weighted aggregation procedure. The weights reflect for each theme the potential relative stress on the environment of each substance. These aggregation methods are developed by the Dutch ministry of the environment (VROM) and are for the major part based on international research on the effects of different substances on environmental quality.² Correspondingly, the extraction of oil and gas is aggregated to one theme by expressing both flows in petajoules. The interrelation between substances and environmental themes and the corresponding theme-related stress equivalents are summed up in table 1.

2. See Adriaanse (1993) for a more detailed discussion.

Table 1.
Environmental themes and their corresponding substances with between brackets the theme related stress equivalents.

Environmental themes	Substances	Theme-equivalents
Greenhouse effect	CO ₂ (1), N ₂ O (270) and CH ₄ (11)	global warming potentials
Depletion of the ozone layer	CFCs 11, 12, 13, 112 (1), CFC 113 (0.8), CFCs 114, 115 (0.6), trichloroethane (0.1) tetrachloride (1) and halon 1301 (10)	ozone depletion potentials
Acidification	NO _x (0.22), SO ₂ (0.31) and NH ₃ (0.59)	acid-equivalents
Eutrophication	P (1) and N (0.1)	eutrophication-equivalents
Accumulation of waste		million kilograms
Natural resources	gas (1) and oil (1)	petajoules

This method leads to a limited number of physical environmental indicators. In the NAMEA the themes are presented in two separate accounts (12 and 13). Account 12 contains two environmental themes which are related to global environmental problems: the greenhouse effect and the depletion of the ozone layer. The corresponding indicators are reflecting the Netherlands' contribution to these global problems. Different accounting rules are applied to acidification, eutrophication, waste accumulation and the extraction of natural resources, because these themes cause environmental damage within the national boundaries. For these problems, information on the national accumulation of pollutants is relevant. This means: total domestic pollution plus import, minus export of pollutants.

At the most aggregate level, NAMEA presents the interrelation between macro-indicators for the economy (NDP, Net Saving, external balance) and the environment (environmental theme indicators). Underlying Tables A1, A2 and A3 much more detailed information systems are available, distinguishing for each account a number of categories. Tables A4, A5, and A6 present such more detailed information on substance flows in account 11 of the macro-tables. The pollution from production processes is classified by industry branch. Pollution emitted by households is split by consumption purposes: a) transport and b) other purposes.

3. comparing industries' and households' contributions to environmental and economic indicators.

The indicators presented in the Tables 2 and 3 are calculated by converting the emission data in the Tables A4, A5 and A6 into environmental stress equivalents and by aggregating these equivalents per theme. Table 2 shows that the emissions in the Netherlands as reflected in the NAMEA have on average decreased or increased significantly less than the Gross Domestic Product (GDP). According to the summary environmental indicators in the modules, the emission of pollutants which damage the ozone layer decreased by an average 12.4% per year. Other environment indicators also show a decrease: eutrophication by 3.5% and acidification by 2.2% yearly. The volume of waste, on the other hand, grew by 1.8% per year, while the emission of greenhouse gases increased by 2.0%. The percentage increases are, however, significantly lower than the volume increase of GDP between 1989 and 1991, i.e. 3.2% per year.

The volume of consumption increased by an annual 3.8% between 1989 and 1991. In spite of this, consumers produced 2.1% less waste per year and caused 4.9% less acidification. The burden to the ozone layer was reduced by 12.3% yearly. However, the increased consumption did lead to more emissions of greenhouse gases (+2.9%) and eutrophication substances (+2.5%) per year. This increase is stronger than that caused by industry (+1.8% and -4.0% respectively per year).

Remarkably, the relatively lower pollution due to consumption is nearly all accounted for by the lower emissions by cars and other forms of personal transport. In this spending category emissions are down all along the line, while the volume of consumption for personal transport increased by nearly 3% per year. This has partly to do with the increasing proportion of cars in the Dutch car fleet being fitted with catalytic converters since 1989. In spite of this decrease, in 1991 personal transport was still responsible for 86% of acidification caused by consumption. Moreover it accounted for 41% of the greenhouse effect and 15% of eutrophication. And this while expenditure on personal transport made up only 9% of total consumer expenditure in 1991.

Table 2
Average annual volume changes 1990-1991 for some economic and environment indicators

	Economic indicators			Environment indicators				
	Net Domestic Product (factor costs)	Labour volume	Consumption expenditure	Greenhouse effect	Damage to ozone layer	Acidation	Eutrophication	Waste
	%							
CONSUMPTION EXPENDITURE			3.8	2.9	-12.3	-4.9	2.5	-2.1
Personal transport			2.8	-1.1	-	-6.3	-7.9	-
Other			3.8	6.0	-12.3	4.8	4.7	-1.7
PRODUCTION	3.3	1.8		1.8	-12.4	-1.8	-4.0	3.2
Agriculture and fisheries	6.5	-0.4		6.8	-	-1.5	-3.9	1.2
Mining and quarrying	4.8	0.0		-	-	-	-	5.2
Manufacturing	1.9	0.8		0.7	-12.5	-1.0	-3.0	4.4
Food, beverages and tobacco	3.7	0.3		2.0	-	-	-	9.0
Oil industry	4.8	0.0		0.3	-	2.3	-	-
Chemical industry	0.0	0.0		0.9	-3.1	-5.6	-13.6	3.2
Metal industry	-1.9	-1.7		-3.8	-	-2.2	-	-
Other manufacturing	2.1	1.1		3.6	-18.4	-1.3	-	1.5
Public utilities	3.2	-2.2		0.4	-	-7.0	-	-
of which: electricity plants	2.2	-1.9		0.1	-	-7.7	-	-
Construction and installation	0.0	0.0		-	-	-	-	-3.9
Transport storage and communication	6.7	2.9		2.8	-	-0.5	-	5.0
Environment cleansing companies	1.9	3.8		2.7	-	-	-	-
Other services	3.3	2.5		1.1	-	-0.7	-	9.4
TOTAL	3.2	1.8	3.8	2.0	-12.4	-2.2	-3.5	1.8

- : contribution too small for a reliable estimate of change.

In nearly all branches of industry which contribute significantly to the thinning of the ozone layer, eutrophication and acidification, the emission of pollutants which cause these problems dropped. The only exception was the emission of acidifying substances by the oil industry (+2.3%). The volume growth of value added was relatively high here too (+4.8%). The category 'other manufacturing' realised the greatest reduction in damage to the ozone layer (-18.4%); this was mainly due to improvements in the manufacture of rubber and plastic products and in the metal products industry.

The decrease in the emission of eutrophication substances was mainly due to less emission by agriculture (-3.9%, with a production growth of 6.5%). Acidification in this branch of industry also dropped (-1.0%). This form of pollution was also down in electricity generation (-7.7%) and in the chemical industry (-5.6%). Electricity plants stabilised their emission of greenhouse gases while increasing value added by 2.2%. In some branches of industry the

increase in waste and the emission of greenhouse gases was higher than production growth. The amount of waste grew strongly in 'other services' (9.4%), which includes commercial services, financial services, government etc., and in the food industry (9.0%). Between 1989 and 1991 the emission of greenhouse gases rose in nearly all the industries distinguished except the basic metals industry. The greatest increase was for agriculture and fisheries (6.8%) and other manufacturing (3.6%).

Table 3
Contributions to production and consumption activity to the Gross Domestic Product, employment and some environmental themes according to the satellite accounts for the environment, 1991

	Economic indicators		Environment indicators					
	Gross Domestic Product (factor costs)	Labour volume	Consumption expenditure	Greenhouse effect	Damage to ozone layer	Acidation	Eutrophication	Waste
	%							
CONSUMPTION EXPENDITURE				20	10	11	9	25
PRODUCTION				80	90	89	91	75
CONSUMPTION EXPENDITURE			100	100	100	100	100	100
Personal transport			9	41	0	86	15	2
Other			91	59	100	14	85	98
PRODUCTION	100	100		100	100	100	100	100
Agriculture and fisheries	4	5		16	0	49	86	6
Mining and quarrying	4	0		2	0	1	0	7
Manufacturing	19	18		36	98	24	11	36
Food, beverages and tobacco	3	3		3	0	1	0	11
Oil industry	1	0		8	0	10	0	0
Chemical industry	3	2		16	44	7	6	16
Metal industry	1	1		4	0	3	0	2
Other manufacturing	12	13		5	54	3	4	7
Public utilities	2	1		26	0	9	1	3
of which: electricity plants	1	0		26	0	9	1	1
Construction and installation	6	8		2	0	2	0	18
Transport and storage	6	5		6	0	9	1	11
Environment cleansing companies	0	0		3	0	1	0	3
Other services	59	63		7	2	5	1	15

Table 3 shows that in 1991 the share of 'other services' in GNP is much higher than the contribution of this sector to the five environmental problems mentioned. Leaving aside the damage to the ozone layer this is also true of other manufacturing. Agriculture and fisheries, the chemical industry and

power stations show the reverse for most of the environmental problems.

In the environment module pollution is registered under the activity where the actual emission takes place. For example, greenhouse gases emitted during the electricity production for rail transport are not registered under the transport industry. Such indirect effects may, however, be calculated in a modelling analysis based on the NAMEA.

Table 4.
Use of internal and external environmental cleansing services by branches of industries.

	1989			1991		
	inter- nal	exter- nal	total use as % of input ¹	inter- nal	exter- nal	total use as % of input ¹
	mln guilders					
Agriculture and fisheries	26	198	0.51	30	262	0.66
Mining	14	112	0.77	14	138	0.67
Oil and gas exploration and exploitation	12	112	0.83	12	138	0.70
Other mining	2		0.13	2		0.14
Manufacturing	563	1240	0.61	695	1622	0.74
Food, beverages and tobacco	103	172	0.36	132	196	0.42
Manufacture of textiles, wearing apparel and leather	114	13	1.44	135	16	1.60
Manufacture of wood products, including furniture	9	3	0.18	10	5	0.21
Manufacture of paper, printing and allied industries	52	30	0.31	63	39	0.35
Petroleum industries	20	233	1.24	28	249	1.27
Chemical industries	71	456	1.10	101	717	1.80
Manufacture of rubber and plastic products	6	2	0.09	11	4	0.15
Manufacture of building material, earthenware and glass	15	33	0.57	16	44	0.67
Basic metal industries	16	194	1.86	21	200	2.32
Manufacture of metal products and machinery	62	97	0.63	74	141	0.51
Other manufacturing	95	7	0.23	104	11	0.24
Public utilities	10	274	1.41	10	298	2.56
Electricity	5	274	2.60	5	298	2.52
Other public utilities	5		0.05	5		0.04
Construction and installation on construction projects	24	20	0.06	28	201	0.29
Transport and storage	61	416	1.09	80	589	1.35
Environmental cleansing services	18		0.86	24		0.87
Other services	557	991	0.38	732	1582	0.49
Total	1273	3251	0.50	1613	4692	0.63

1. Internal environmental cleansing services are included in total input (and output) in the NAMEA.

Table 4 contains an overview of pollution prevention costs of a number of branches of industry. As mentioned in section 2, these efforts can be

subdivided into two types of services: internal and external cleansing services. From 1989 to 1991, the combined average annual increase in these expenditures was 18%, much higher than the average nominal annual growth rate of GDP. The percentages in table 4 give total environmental protection expenditures as a share of total input costs per industry. The average share for all industries is only 0.5% of input in 1989 and shows a small increase to 0.6% in 1991.

The shares vary between production activities, and these differences are generally not in conformity with the relative contributions to environmental themes. For instance, electricity generation spends 2.5% of total input costs on environmental protection in 1991, while this percentage is only slightly above average in agriculture and fisheries. Both activities are significant polluters. Related to this the emission of greenhouse gases nearly stabilised from electricity generation, while the annual growth of value added was 2.2%. The reduction in acid emissions from electricity generation was almost 8%. This combination of relatively high expenditures on environmental cleansing and a reduction in the contributions to environmental themes was also found in the basic metals industry. In this production activity, the decrease in pollution of all themes was greater than the reduction in GDP and employment. Concomitantly, the environmental protection expenditures were high in relation to value added. Reverse patterns were found for transport and oil refineries. Here, above average environmental expenditures were not combined with decreases in pollution. Nevertheless, growth rates of the contributions to environmental themes in the oil refineries were lower than the volume increase in net value added.

A Comparison of cleansing expenditures and changes in environment indicators would benefit from a classification of these expenditures according to the environmental themes to which they are related. Unfortunately, this is not yet possible.

4. Other applications and future extensions

The NAMEA system can be used for many purposes. For example, the indirect economic and ecological effects of consumption or exports can be shown, by an accumulation of the pollution generated in all activities that contributed to the realisation of a unit of final product. Detailed classifications of production activities and the concomitant pollutants are very important in this respect. Besides, the NAMEA can serve as a framework for applied general equilibrium models. These models can be used for calculating e.g. the effects of an energy tax on the environmental or economic indicators in the system. Another application of models is the estimation of a National income in a sustainable situation, that is a so called Green National Income.³

At present, the conceptual and statistical development of the NAMEA is continued. For instance, the number of environmental themes will be expanded when new information becomes available. This relates to e.g. other themes from the Netherlands' Environmental Policy Plan (the dispersion of toxic substances, stench and noise nuisance and excessive use of ground water). Another expansion of the system is the decomposition of supply and use data in the NAMEA into physical units and average prices. A direct connection can then be made between the use of natural resources and the emissions of pollutants. This may lead to detailed research on material flows in production processes (see Konijn and De Boer 1995).

3. In De Boer et al. (1994) such a simple optimisation model based on the NAMEA is presented.

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The following CBS publications were used during the compilation of the NAMEA's:*)

- Animal manure and nutrients 1990 [floppy disk].
- Costs and financing of environmental control 1991-1992.
- Emissions from the combustion of fossil fuels in furnaces 1980-1990.
- Emissions by road traffic 1980-1990.
- Environmental Statistics of the Netherlands 1993 (English publication).
- Environmental Quarterly.
- Industrial costs for the protection of the environment 1992.
- Industrial waste 1992.
- Process emissions 1980-1990.
- Manure production 1990.
- Minerals in agriculture 1970-1990. Phosphorus, nitrogen and potassium
- Municipal waste 1991.
- National Accounts 1993.
- Phosphorus in the Netherlands 1970-1983.
- Statistics of water quality management and control, volume A: Discharge of waste water 1991, volume B: Treatment of sewage 1992.
- Vehicle wrecks 1989.

*) In each publication title, table of contents, summary and explanation of the symbols used are given in English.

Annex

TABLE A 1
A NATIONAL ACCOUNTING MATRIX INCLUDING ENVIRONMENTAL ACCOUNTS (NAMEA) FOR THE NETHERLANDS, 1989
(ACCOUNT 1-10 IN MILLION GUILDERS)

ACCOUNT (classification)	Goods and services (product-groups)		Consumption of households (Purposes)		Production (Branches of industries)	Income generation (primary input categories)	Income distribution and use (Sectors)	Capital	Taxes (Taxes categ.)		Rest of the world Current
	1a	1b	2a	2b					3	4	
Goods and services (Product groups)	Trade and transport margins		Consumption of households		Intermediate consumption		Consumption government	Gross capital formation			Exports (fob)
Environmental cleansing services	1a		22	-	4524		999				
Other goods and services	1b	-	509	283969	458920		70766	108519			26767
Consumption of households (Purposes)							Consumption households				
Environment	2a						531				
Other purposes	2b						283969				
Production (Branches of industry)	3	Production, basic prices									
		5464	901599								
Income generation (Primary input categories)	4				Net Domestic Product, factor costs 384867					Vat not handed over to the government 1300	Wages to the rest of the world 112
Income distribution and use (Sectors)	5					Net National Generated Income, factor costs 386020	Property income and current transfers 802290			Taxes 3059 108087	Income and other transfers from the rest of the world 5936
Capital	6				Consumption of fixed capital 54880		Net saving 71540				
Financial balance	7							Net lending to the rest of the world 15620			
Taxes (Tax categories)		Taxes less subsidies on products			Other taxes less subsidies on production		Taxes on income and wealth	VAT on land and taxes on investment			Taxes from the rest of the world
Environmental taxes	8a	-			1139		1920				
Other taxes	8b	81	40014		2733		64620	970			1110
Rest of the world Current	9	Imports (cif)				Wages to the rest of the world 1260	Income and other transfers to the rest of the world 62190			Taxes to the rest of the world 140	
		248745									
Rest of the world Capital	10							Capital transfers to the rest of the world 2220			Balance of payment of the rest of the world -16910
Substances (CFCs en halons in 1000 kg, gas in pj, oil in tj and other substances in million kg)					Absorption of substances in production						Trans border pollution to the rest of the world
CO2	11a										
N2O	11b										
CH4	11c										
CFCs en halons	11d										
NOx	11e										495
SO2	11f										168
NH3	11g										120
P	11h										26
N	11i										617
Waste	11j				2987						
Gas	11k				2279						
Oil	11l				146						
Global environmental themes								Environmental indicators			
Greenhouse effects (GWP)	12a							181631			
Ozone layer depletion (ODP)	12b							4971			
National environmental themes											
Acidification (AEQ)	13a							169			
Eutrophication (EEQ)	13b							306			
Waste (KG)	13c							22504			
Natural resource depletion (PJ)	13d							-158			
TOTAL		Supply, market prices	Consumption of households	Costs, basic prices	Allocation of generated income	Current outlay	Capital outlays	Tax receipts		Current receipts from the rest of the world	
		5545 1190358	531 283969	907063	387280	1358825	127329	3059 109527		312355	

	Rest of the world Capital	Substances (CFCs in halons in 1000 kg, gas in pj, oil in tj and other substances in million kg)										Global environmental themes		National environmental themes				TOTAL		
		CFCs &										Greenhouse effect	Depletion ozone layer	Acidification	Eutrophication	Depletion of Natural resources				
		CO2	N2	CH4	halons	NOx	SO2	NH3	P	N	Waste						Gas		Oil	12a
10	11a	11	11c	11d	11e	11f	11g	11h	11i	11j	11k	11l								
1a																			Commodity use	
1b																			5545 1190356	
2a		Emission of pollutants from households																	Consumption of households	
2b		34312	2	4	832	172	6	-	13	122	6957								531 283969	
3		Emission of pollutants from industries																	Production, basic prices	
4		123688	59	659	5542	404	206	227	171	1335	18534								907063	
5																			Generated income	
6	Capital transfers from the rest of the world 930	Other changes in natural resources										2121	34							Current receipts
7	Net lending from the rest of the world -15620																		1358825	
8a																			Capital receipts	
8b																			127329	
9		Trans border pollution from the rest of the world																		Tax payments
10																			3059 109527	
11a																			Current payments to the rest of the world	
11b																			312355	
11c																			Capital payments to the rest of the world	
11d																			-14690	
11e																			Destination of substances	
11f																			158000	
11g																			61	
11h																			663	
11i																			6374	
11j																			6374	
11k																			689	
11l																			689	
12a																			323	
12b																			253	
13a																			204	
13b																			1898	
13c																			25491	
13d																			2121	
12a																			-158	
12b																			-112	
13a																			34	
13b																			181631	
13c																			4971	
13d																			169	
13a																			306	
13b																			22504	
13c																			-158	
13d																			-158	
Capital receipts from the rest of the world	-14690	Origin of substances										Theme-equivalents, Global		Theme-equivalents, national						
		158000	61	663	6374	689	323	253	204	1898	25491	2121	34	181631	4971	169	306	22504	-158	

TABLE A 2

A NATIONAL ACCOUNTING MATRIX INCLUDING ENVIRONMENTAL ACCOUNTS (NAMEA) FOR THE NETHERLANDS, 1990
(ACCOUNT 1-10 IN MILLION GUILDERS)

ACCOUNT (classification)	Goods and services (product-groups)		Consumption of households (Purposes)		Production (Branches of industries)	Income generation (primary input categories)	Income distribution and use (Sectors)	Capital	Taxes (Taxes categ.)		Rest of the world Current
	1a	1b	2a	2b					3	4	
Goods and services (Product groups)		Trade and transport margins	Consumption of households		intermediate consumption		Consumption government	Gross capital formation			Exports (fob)
Environmental cleansing services	1a		24	-	5174		1228				
Other goods and services	1b	-	693	302379	477661		73567	113403			27974
Consumption of households (Purposes)							Consumption households				
Environment	2a						717				
Other purposes	2b						302379				
Production (Branches of industry)		3	Production, basic prices								
			6342	946428							
Income generation (Primary input categories)					Net Domestic Product, factor costs					Vat not handed over to the government	Wages to the rest of the world
					408436					1614	85c
Income distribution and use (Sectors)						Net National Generated Income, factor costs	Property income and current transfers			Taxes	Income and other transfers from the rest of the world
						409770	534130			3458 124749	5897c
Capital					Consumption of fixed capital		Net saving				
					58230		75980				
Financial balance								Net lending to the rest of the world			
								18550			
Taxes (Tax categories)			Taxes less subsidies on products		Other taxes less subsidies on production		Taxes on income and wealth	VAT on land and taxes on investment			Taxes from the rest of the world
Environmental taxes	8a		609		819		2030				
Other taxes	8b	84	44584		2450		77250	1055			1070
Rest of the world Current		9	Imports (cif)			Wages to the rest of the world	Income and other transfers to the rest of the world			Taxes to the rest of the world	
			255828			1130	63790			130	
Rest of the world Capital		10						Capital transfers to the rest of the world			Balance of payment of the rest of the world
								2090			-19750
Substances (CFCs en halons in 1000 kg, gas in pj, oil in tj and other substances in million kg)					Absorption of substances in production						Trans border pollution to the rest of the world
CO2	11a										
N2O	11b										
CH4	11c										
CFCs en halons	11d										
NOx	11e										492
SO2	11f										164
NH3	11g										110
P	11h										25
N	11i										584
Waste	11j				2829						
Gas	11k				2310						
Oil	11l				150						
Global environmental themes								Environmental indicators			
Greenhouse effects (GWP)	12a							182591			
Ozone layer depletion (ODP)	12b							4756			
National environmental themes											
Acidification (AEQ)	13a							160			
Eutrophication (EEO)	13b							294			
Waste (KG)	13c							22890			
Natural resource depletion (PJ)	13d							7438			
TOTAL		Supply, market prices	Consumption of households		Costs, basic prices	Allocation of generated income	Current outlay	Capital outlays		Tax receipts	Current receipts from the rest of the world
		6426 1247449	717 302379		952770	410900	1131071	135098		3458 126493	320886

Rest of the world Capital	Substances (CFCs in halons in 1000 kg, gas in pj, oil in tj and other substances in million kg)											Global environmental themes		National environmental themes				TOTAL		
	CFCs & CO2 N2 CH4 halons NOx SO2 NH3 P N Waste Gas Oil											Greenhouse effect	Depletion ozone layer	Acidification	Eutrophication	Depletion of Natural resources				
10	11a	11	11c	11d	11e	11f	11g	11h	11i	11j	11k	11l	12a	12b	13a	13b	13c	13d		
1a																			Commodity use	
1b																			6426 1247449	
2a	Emission of pollutants from households																			Consumption of households
2b	33919	2	3	800	164	6	-	15	120	6783									717 302379	
3	Emission of pollutants from industries																			Production, basic prices
	124579	59	690	5331	394	202	213	163	1258	18936									952770	
4																			Generated income	
																			410900	
5																			Current receipts	
																			1131071	
6	Capital transfers from the rest of the world	Other changes in natural resources																		Capital receipts
	890												9748	-					135098	
7	Net lending from the rest of the world																			
	-18550																			
8a																			Tax payments	
8b																			3458 126493	
9		Trans border pollution from the rest o.t. world																		Current payments to the rest of the world
					96	111	27	20	417										320886	
10																			Capital payments to the rest of the world	
																			-17660	
11a													Allocation to global environmental themes		Allocation to national environmental themes (immission of substances)			Destination of substances		
11b													158498						158498	
11c													61						61	
11d													693						693	
11e														6131					6131	
11f															162				654	
11g															155				319	
11h															130				240	
11i																	173		198	
11j																	1211		1795	
11k																	22890		25719	
11l																	7438		9748	
																	-150		-	
12a																			Theme-equivalent global	
12b																			182591 4756	
13a																			Theme-equivalent national	
13b																			160	
13c																			294	
13d																			22890 7438	
	Capital receipts from the rest of the world	Origin of substances											Theme-equivalents, Global		Theme-equivalents, national					
	-17660	158498	61	693	6131	654	319	240	198	1795	25719	9748	-	182591	4756	160	294	22890	7438	

TABLE A 3

A NATIONAL ACCOUNTING MATRIX INCLUDING ENVIRONMENTAL ACCOUNTS (NAMEA) FOR THE NETHERLANDS, 1991
(ACCOUNT 1-10 IN MILLION GUILDERS)

ACCOUNT (classification)	Goods and services (product-groups)		Consumption of households (Purposes)		Production (Branches of industries)	Income generation (primary input categories)	Income distribution and use (Sectors)	Capital		Taxes (Taxes categ.)		Rest of the world Current
	1a	1b	2a	2b				3	4	5	6	
Goods and services (Product groups)	Trade and transport margins		Consumption of households		Intermediate consumption		Consumption government	Gross capital formation				Exports (fob)
Environmental cleansing services	1a		24	-	6305		1410					
Other goods and services	1b	-	710	321727	501763		76837	114818				29308
Consumption of households (Purposes)							Consumption households					
Environment	2a						734					
Other purposes	2b						321727					
Production (Branches of industry)	3		Production, basic prices									
			7627	994861								
Income generation (Primary input categories)	4				Net Domestic Product, factor costs					Vat not handed over to the government		Wages to the rest of the world
					429118					1880		82
Income distribution and use (Sectors)	5					Net National Generated Income, factor costs	Property income and current transfers			Taxes		Income and other transfers from the rest of the world
						430650	573920			3982 137518		6015
Capital	6				Consumption of fixed capital		Net saving					
					61560		72960					
Financial balance	7							Net lending to the rest of the world				
								17340				
Taxes (Tax categories)			Taxes less subsidies on products		Other taxes less subsidies on production		Taxes on income and wealth	VAT on land and taxes on investment				Taxes from the rest of the world
Environmental taxes	8a	907			855		2220					
Other taxes	8b	112 45787			2887		88730	992				105
Rest of the world Current	9		Imports (cif)			Wages to the rest of the world	Income and other transfers to the rest of the world			Taxes to the rest of the world		
			267386			1170	67720			160		
Rest of the world Capital	10							Capital transfers to the rest of the world				Balance of payment of the rest of the world
								2350				-1871
Substances (CFCs en halons in 1000 kg, gas in pj, oil in tj and other substances in million kg)					Absorption of substances in production							Trans border pollution to the rest of the world
CO2	11a											
N2O	11b											
CH4	11c											
CFCs en halons	11d											
NOx	11e											488
SO2	11f											159
NH3	11g											113
P	11h											24
N	11i											581
Waste	11j				2645							
Gas	11k				2595							
Oil	11l				138							
Global environmental themes								Environmental indicators				
Greenhouse effects (GWP)	12a							88890				
Ozone layer depletion (ODP)	12b							3816				
National environmental themes												
Acidification (AEQ)	13a							156				
Eutrophication (EEQ)	13b							287				
Waste (KG)	13c							23761				
Natural resource depletion (PJ)	13d							-759				
TOTAL	Supply, market prices		Consumption of households		Costs, basic prices	Allocation of generated income	Current outlay	Capital outlays	Tax receipts		Current receipts from the rest of the world	
		7739 1308941	734 321727		1002488	431820	1206258	135500	3982 139558		336436	

Rest of the world Capital	Substances (CFCs and halons in 1000 kg, gas in pj, oil in tj and other substances in million kg)											Global environmental themes		National environmental themes				TOTAL		
	CFCs & CO2 N2 CH4 halons NOx SO2 NH3 P N Waste Gas Oil											Greenhouse effect	Depletion ozone layer	Acidification	Eutrophication	Depletion of Natural resources				
10	11a	11	11c	11d	11e	11f	11g	11h	11i	11j	11k	11l	12a	12b	13a	13b	13c	13d		
																			Commodity use	
a																			7739	
b																			1308941	
	Emission of pollutants from households																			Consumption of households
1a	36372	2	4	656	156	5	-	15	115	6663									734	
1b																			321727	
	Emission of pollutants from industries																			Production, basic prices
1	128040	59	724	4375	397	191	220	155	1257	19742									1002488	
																			Generated income	
																			431820	
																			Current receipts	
																			1206258	
	Capital transfers from the rest of the world	Other changes in natural resources																		Capital receipts
	980										1836	138							135500	
	Net lending from the rest of the world																			
	-17340																			
																			Tax payments	
1a																			3982	
1b																			139558	
		Trans border pollution from the rest o.t. world																		Current payments to the rest of the world
1					93	99	27	20	415										336436	
																			Capital payments to the rest of the world	
1																			-16360	
1a													Allocation to global environmental themes	Allocation to national environmental themes (immission of substances)				Destination of substances		
1b													164412						164412	
1c													61						61	
1d													728						728	
1e														5031					5031	
1f															158				646	
1g															136				295	
1h															134				247	
1i																166			190	
1j																1206			1787	
1k																	23760		26405	
1l																		-759	1836	
																			138	
2a																			Theme-equivalent global	
2b																			188890	
																			3816	
3a																			Theme-equivalent national	
3b																			156	
3c																			287	
3d																			23760	
																			-759	
	Capital receipts from the rest of the world	Origin of substances											Theme-equivalents, Global		Theme-equivalents, national					
	-16360	164412	61	728	5031	646	295	247	190	1787	26405	1836	138	188890	3816	156	287	23760	-759	

TABLE A 4
DETAILED PRESENTATION OF THE ORIGIN AND DESTINATION OF MATERIAL FLOWS IN THE NAMEA OF 1989

	CO2	N2O	CH4	CFCs and	NOx	SO2	NH3	P	N	Waste	Natural	Crude
	11a	11b	11c	halons	11e	11f	11g	11h	11i	11j	gas	oil
	mln kg			1000 kg	mln kg						pj	tj
ORIGIN												
FINAL CONSUMPTION EXPENDITURE (2)	34312	2	4	832	172	6	-	13	122	6957	-	-
Own transport	15012	2	-	-	153	5	-	-	46	192	-	-
Other	19300	-	4	832	19	1	-	13	76	6765	-	-
OUTPUT (3)	123688	59	659	5542	404	206	227	171	1335	18534	-	-
Agriculture, hunting, forestry, fishing	7772	33	484	-	32	2	223	143	1202	1163	-	-
Mining and quarrying												
Crude petroleum and natural gas production	1519	-	74	-	6	2	-	-	2	1235	-	-
Other mining and quarrying	321	-	-	-	-	1	-	-	-	-	-	-
Manufacturing												
Food, beverage and tobacco industry	4000	-	1	9	11	2	-	1	4	1874	-	-
Textile, wearing apparel and leather industry	284	-	-	160	1	-	-	-	-	43	-	-
Wood, furniture and building materials industry	125	-	-	752	1	1	-	-	-	148	-	-
Paper, paper products, printing and publishing industry	1543	-	-	6	5	-	-	-	1	369	-	-
Petroleum industry	11770	-	-	-	22	72	-	-	6	54	-	-
Chemical industry	19990	17	4	1678	44	27	4	20	21	2909	-	-
Rubber and artificial materials processing industry	1597	-	-	1144	1	-	-	-	-	35	-	-
Manufacture of building materials, earthenware and glass products	2330	-	-	65	13	7	-	-	4	463	-	-
Manufacture of basic metals	6593	-	-	15	12	15	-	-	4	311	-	-
Manufacture of metal products and machinery	858	-	-	971	3	-	-	-	1	149	-	-
Industrial manufacturing n.e.c.	750	-	-	629	2	1	-	6	14	114	-	-
Public utilities												
Electricity	38560	-	-	-	77	43	-	-	23	152	-	-
Other public utilities	49	-	82	-	-	-	-	-	-	303	-	-
Construction	2535	-	9	-	26	3	-	-	8	3866	-	-
Transport and storage	8843	2	-	6	79	22	-	-	24	2057	-	-
Environmental cleansing and sanitary services	3431	6	5	-	5	4	-	-	2	810	-	-
Other services	10818	1	-	107	64	4	-	1	19	2479	-	-
CAPITAL (6)											2121	34
REST OF THE WORLD, CURRENT (9)					113	111	26	20	441			
Total = column total 11	158000	61	663	6374	689	323	253	204	1898	25491	2121	34
DESTINATION												
OUTPUT (3)												
Crude petroleum and natural gas production											2279	146
Environmental cleansing and sanitary services										2987		
REST OF THE WORLD, CURRENT (9)					495	168	120	26	617			
MONDIAL ENVIRONMENTAL THEMES (12)	158000	61	663	6374								
NATIONAL ENVIRONMENTAL THEMES (13)					194	155	133	178	1281	22504	-158	-112
Total = row total 11	158000	61	663	6374	689	323	253	204	1898	25491	2121	34

TABLE A 5
DETAILED PRESENTATION OF THE ORIGIN AND DESTINATION OF MATERIAL FLOWS IN THE NAMEA OF 1990

	CO2	N2O	CH4	CFCs and	NOx	SO2	NH3	P	N	Waste	Natural	Crude
	11a	11b	11c	halons	11e	11f	11g	11h	11i	11j	gas	oil
	mln kg			1000 kg	mln kg						pj	tj
ORIGIN												
FINAL CONSUMPTION EXPENDITURE (2)	33919	2	3	800	164	6	-	15	120	6783	-	-
Own transport	14719	2	-	-	145	5	-	-	44	134	-	-
Other	19200	-	3	800	19	1	-	15	76	6649	-	-
OUTPUT (3)	124579	59	690	5331	394	202	213	163	1258	18936	-	-
Agriculture, hunting, forestry, fishing	7907	33	521	-	31	2	210	136	1122	1173	-	-
Mining and quarrying												
Crude petroleum and natural gas production	1414	-	72	-	5	2	-	-	1	1300	-	-
Other mining and quarrying	350	-	-	-	-	1	-	-	-	-	-	-
Manufacturing												
Food, beverage and tobacco industry	4185	-	1	9	12	3	-	1	4	2040	-	-
Textile, wearing apparel and leather industry	290	-	-	160	1	-	-	-	-	51	-	-
Wood, furniture and building materials industry	128	-	-	602	1	-	-	-	-	177	-	-
Paper, paper products, printing and publishing industry	1609	-	-	6	4	-	-	-	1	379	-	-
Petroleum industry	11178	-	-	-	21	71	-	-	6	45	-	-
Chemical industry	20935	17	3	1693	44	24	3	16	26	2982	-	-
Rubber and artificial materials processing industry	1610	-	-	1143	1	-	-	-	-	37	-	-
Manufacture of building materials, earthenware and glass products	2306	-	-	50	13	6	-	-	4	417	-	-
Manufacture of basic metals	6301	-	-	15	11	14	-	-	4	288	-	-
Manufacture of metal products and machinery	914	-	-	928	4	1	-	-	1	151	-	-
Industrial manufacturing n.e.c.	821	-	-	616	2	-	-	10	16	127	-	-
Public utilities												
Electricity	38158	-	-	-	73	45	-	-	22	163	-	-
Other public utilities	58	-	82	-	1	-	-	-	-	383	-	-
Construction	2766	-	7	-	25	3	-	-	7	3722	-	-
Transport and storage	9021	2	-	6	78	23	-	-	23	2151	-	-
Environmental cleansing and sanitary services	3616	6	4	-	5	4	-	-	2	730	-	-
Other services	11012	1	-	103	62	3	-	-	19	2620	-	-
CAPITAL (6)											9748	-
REST OF THE WORLD, CURRENT (9)					96	111	27	20	417	.		
Total = column total 11	158498	61	693	6131	654	319	240	198	1795	25719	9748	-
DESTINATION												
OUTPUT (3)												
Crude petroleum and natural gas production											2310	150
Environmental cleansing and sanitary services										2829		
REST OF THE WORLD, CURRENT (9)					492	164	110	25	584	.		
MONDIAL ENVIRONMENTAL THEMES (12)	158498	61	693	6131								
NATIONAL ENVIRONMENTAL THEMES (13)					162	155	130	173	1211	22890	7438	-150
Total = row total 11	158498	61	693	6131	654	319	240	198	1795	25719	9748	-

TABLE A 6
DETAILED PRESENTATION OF THE ORIGIN AND DESTINATION OF MATERIAL FLOWS IN THE NAMEA OF 1991

	CO2	N2O	CH4	CFCs and	NOx	SO2	NH3	P	N	Waste	Natural	Crude
	11a	11b	11c	halons	11e	11f	11g	11h	11i	11j	gas	oil
	mln kg			1000 kg	mln kg						pj	tj
ORIGIN												
FINAL CONSUMPTION EXPENDITURE (2)	36372	2	4	656	156	5	-	15	115	6663	-	-
Own transport	14672	2	-	-	135	4	-	-	39	120	-	-
Other	21700	-	4	656	21	1	-	15	76	6543	-	-
OUTPUT (3)	128040	59	724	4375	397	191	220	155	1257	19742	-	-
Agriculture, hunting, forestry, fishing	10260	33	534	-	36	2	215	131	1117	1190	-	-
Mining and quarrying												
Crude petroleum and natural gas production	1566	-	78	-	5	2	-	-	2	1368	-	-
Other mining and quarrying	357	-	-	-	-	1	-	-	-	-	-	-
Manufacturing												
Food, beverage and tobacco industry	4173	-	1	8	12	2	-	1	4	2225	-	-
Textile, wearing apparel and leather industry	357	-	-	160	1	-	-	-	-	61	-	-
Wood, furniture and building materials industry	83	-	-	478	1	-	-	-	-	216	-	-
Paper, paper products, printing and publishing industry	1626	-	-	5	4	-	-	-	1	381	-	-
Petroleum industry	11843	-	-	-	22	76	-	-	9	56	-	-
Chemical industry	20307	17	3	1626	41	22	4	14	25	3099	-	-
Rubber and artificial materials processing industry	1487	-	-	720	3	-	-	-	1	41	-	-
Manufacture of building materials, earthenware and glass products	2335	-	-	50	14	5	1	-	5	378	-	-
Manufacture of basic metals	6097	-	-	15	12	14	-	-	4	308	-	-
Manufacture of metal products and machinery	1190	-	-	742	3	-	-	-	1	160	-	-
Industrial manufacturing n.e.c.	992	-	-	472	2	-	-	9	16	123	-	-
Public utilities												
Electricity	38781	-	-	-	68	35	-	-	21	149	-	-
Other public utilities	75	-	96	-	1	-	-	-	-	485	-	-
Construction	2501	-	8	-	26	3	-	-	8	3574	-	-
Transport and storage	9254	2	-	6	78	22	-	-	23	2270	-	-
Environmental cleansing and sanitary services	3641	6	4	-	5	3	-	-	2	690	-	-
Other services	11115	1	-	93	63	4	-	-	18	2968	-	-
CAPITAL (6)											1836	138
REST OF THE WORLD, CURRENT (9)					93	99	27	20	415			
Total = column total 11	164412	61	728	5031	646	295	247	190	1787	26405	1836	138
DESTINATION												
OUTPUT (3)												
Crude petroleum and natural gas production											2595	138
Environmental cleansing and sanitary services										2645		
REST OF THE WORLD, CURRENT (9)					488	159	113	24	581			
MONDIAL ENVIRONMENTAL THEMES (12)	164412	61	728	5031								
NATIONAL ENVIRONMENTAL THEMES (13)					158	136	134	166	1206	23760	-759	-
Total = row total 11	164412	61	728	5031	646	295	247	190	1787	26405	1836	138

Statistics Netherlands
National Accounts Occasional Papers

- NA/01 Flexibility in the system of National Accounts**, Van Eck, R., C.N. Gorter and H.K. van Tuinen (1983).
This paper sets out some of the main ideas of what gradually developed into the Dutch view on the fourth revision of the SNA. In particular it focuses on the validity and even desirability of the inclusion of a number of carefully chosen alternative definitions in the "Blue Book", and the organization of a flexible system starting from a core that is easier to understand than the 1968 SNA.
- NA/02 The unobserved economy and the National Accounts in the Netherlands, a sensitivity analysis**, Broesterhuizen, G.A.A.M. (1983).
This paper studies the influence of fraud on macro-economic statistics, especially GDP. The term "fraud" is used as meaning unreporting or underreporting income (e.g. to the tax authorities). The conclusion of the analysis of growth figures is that a bias in the growth of GDP of more than 0.5% is very unlikely.
- NA/03 Secondary activities and the National Accounts: Aspects of the Dutch measurement practice and its effects on the unofficial economy**, Van Eck, R. (1985).
In the process of estimating national product and other variables in the National Accounts a number of methods is used to obtain initial estimates for each economic activity. These methods are described and for each method various possibilities for distortion are considered.
- NA/04 Comparability of input-output tables in time**, Al, P.G. and G.A.A.M. Broesterhuizen (1985).
It is argued that the comparability in time of statistics, and input-output tables in particular, can be filled in in various ways. The way in which it is filled depends on the structure and object of the statistics concerned. In this respect it is important to differentiate between coordinated input-output tables, in which groups of units (industries) are divided into rows and columns, and analytical input-output tables, in which the rows and columns refer to homogeneous activities.
- NA/05 The use of chain indices for deflating the National Accounts**, Al, P.G., B.M. Balk, S. de Boer and G.P. den Bakker (1985).
This paper is devoted to the problem of deflating National Accounts and input-output tables. This problem is approached from the theoretical as well as from the practical side. Although the theoretical argument favors the use of chained Vartia-I indices, the current practice of compiling National Accounts restricts to using chained Paasche and Laspeyres indices. Various possible objections to the use of chained indices are discussed and rejected.
- NA/06 Revision of the system of National Accounts: the case for flexibility**, Van Bochove, C.A. and H.K. van Tuinen (1985).
It is argued that the structure of the SNA should be made more flexible. This can be achieved by means of a system of a general purpose core supplemented with special modules. This core is a fully fledged, detailed system of National Accounts with a greater institutional content than the present SNA and a more elaborate description of the economy at the meso-level. The modules are more analytic and reflect special purposes and specific theoretical views.
- NA/07 Integration of input-output tables and sector accounts; a possible solution**, Van den Bos, C. (1985).
The establishment-enterprise problem is tackled by taking the institutional sectors to which the establishments belong into account during the construction of input-output tables. The extra burden on the construction of input-output tables resulting from this approach is examined for the Dutch situation. An adapted sectoring of institutional units is proposed for the construction of input-output tables.
- NA/08 A note on Dutch National Accounting data 1900-1984**, Van Bochove, C.A. (1985).
This note provides a brief survey of Dutch national accounting data for 1900-1984, concentrating on national income. It indicates where these data can be found and what the major discontinuities are. The note concludes that estimates of the level of national income may contain inaccuracies; that its growth rate is measured accurately for the period since 1948; and that the real income growth rate series for 1900-1984 may contain a systematic bias.

- NA/09 The structure of the next SNA: review of the basic options**, Van Bochove, C.A. and A.M. Bloem (1985).
There are two basic issues with respect to the structure of the next version of the UN System of National Accounts. The first is its 'size': reviewing this issue, it can be concluded that the next SNA should contain an integrated meso-economic statistical system. It is essential that the next SNA contains an institutional system without the imputations and attributions that pollute the present SNA. This can be achieved by distinguishing, in the central system of the next SNA, a core (the institutional system), a standard module for non-market production and a standard module describing attributed income and consumption of the household sector.
- NA/10 Dual sectoring in National Accounts**, Al, P.G. (1985).
Following a conceptual explanation of dual sectoring, an outline is given of a statistical system with complete dual sectoring in which the linkages are also defined and worked out. It is shown that the SNA 1968 is incomplete and obscure with respect to the links between the two sub-processes.
- NA/11 Backward and forward linkages with an application to the Dutch agro-industrial complex**, Harthoorn, R. (1985).
Some industries induce production in other industries. An elegant method is developed for calculating forward and backward linkages avoiding double counting. For 1981 these methods have been applied to determine the influence of Dutch agriculture in the Dutch economy in terms of value added and labour force.
- NA/12 Production chains**, Harthoorn, R. (1986).
This paper introduces the notion of production chains as a measure of the hierarchy of industries in the production process. Production chains are sequences of transformation of products by successive industries. It is possible to calculate forward transformations as well as backward ones.
- NA/13 The simultaneous compilation of current price and deflated input-output tables**, De Boer, S. and G.A.A.M. Broesterhuizen (1986).
A few years ago the method of compiling input-output tables underwent in the Netherlands an essential revision. The most significant improvement is that during the entire statistical process, from the processing and analysis of the basic data up to and including the phase of balancing the tables, data in current prices and deflated data are obtained simultaneously and in consistency with each other.
- NA/14 A proposal for the synoptic structure of the next SNA**, Al, P.G. and C.A. van Bochove (1986).
- NA/15 Features of the hidden economy in the Netherlands**, Van Eck, R. and B. Kazemier (1986).
This paper presents survey results on the size and structure of the hidden labour market in the Netherlands.
- NA/16 Uncovering hidden income distributions: the Dutch approach**, Van Bochove, C.A. (1987).
- NA/17 Main national accounting series 1900-1986**, Van Bochove, C.A. and T.A. Huitker (1987).
The main national accounting series for the Netherlands, 1900-1986, are provided, along with a brief explanation.
- NA/18 The Dutch economy, 1921-1939 and 1969-1985. A comparison based on revised macro-economic data for the interwar period**, Den Bakker, G.P., T.A. Huitker and C.A. van Bochove (1987).
A set of macro-economic time series for the Netherlands 1921-1939 is presented. The new series differ considerably from the data that had been published before. They are also more comprehensive, more detailed, and conceptually consistent with the modern National Accounts. The macro-economic developments that are shown by the new series are discussed. It turns out that the traditional economic-historical view of the Dutch economy has to be reversed.
- NA/19 Constant wealth national income: accounting for war damage with an application to the Netherlands, 1940-1945**, Van Bochove, C.A. and W. van Sorge (1987).

- NA/20 The micro-meso-macro linkage for business in an SNA-compatible system of economic statistics, Van Bochove, C.A. (1987).**
- NA/21 Micro-macro link for government, Bloem, A.M. (1987).**
This paper describes the way the link between the statistics on government finance and national accounts is provided for in the Dutch government finance statistics.
- NA/22 Some extensions of the static open Leontief model, Harthoorn, R. (1987).**
The results of input-output analysis are invariant for a transformation of the system of units. Such transformation can be used to derive the Leontief price model, for forecasting input-output tables and for the calculation of cumulative factor costs. Finally the series expansion of the Leontief inverse is used to describe how certain economic processes are spread out over time.
- NA/23 Compilation of household sector accounts in the Netherlands National Accounts, Van der Laan, P. (1987).**
This paper provides a concise description of the way in which household sector accounts are compiled within the Netherlands National Accounts. Special attention is paid to differences with the recommendations in the United Nations System of National Accounts (SNA).
- NA/24 On the adjustment of tables with Lagrange multipliers, Harthoorn, R. and J. van Dalen (1987).**
An efficient variant of the Lagrange method is given, which uses no more computer time and central memory than the widely used RAS method. Also some special cases are discussed: the adjustment of row sums and column sums, additional restraints, mutual connections between tables and three dimensional tables.
- NA/25 The methodology of the Dutch system of quarterly accounts, Janssen, R.J.A. and S.B. Algera (1988).**
In this paper a description is given of the Dutch system of quarterly national accounts. The backbone of the method is the compilation of a quarterly input-output table by integrating short-term economic statistics.
- NA/26 Imputations and re-routeings in the National Accounts, Gorter, Cor N. (1988).**
Starting out from a definition of 'actual' transactions an inventory of all imputations and re-routeings in the SNA is made. It is discussed which of those should be retained in the core of a flexible system of National Accounts. Conceptual and practical questions of presentation are brought up. Numerical examples are given.
- NA/27 Registration of trade in services and market valuation of imports and exports in the National Accounts, Bos, Frits (1988).**
The registration of external trade transactions in the main tables of the National Accounts should be based on invoice value; this is not only conceptually very attractive, but also suitable for data collection purposes.
- NA/28 The institutional sector classification, Van den Bos, C. (1988).**
A background paper on the conceptual side of the grouping of financing units. A limited number of criteria are formulated.
- NA/29 The concept of (transactor-)units in the National Accounts and in the basic system of economic statistics, Bloem, Adriaan M. (1989).**
Units in legal-administrative reality are often not suitable as statistical units in describing economic processes. Some transformation of legal-administrative units into economic statistical units is needed. This paper examines this transformation and furnishes definitions of economic statistical units. Proper definitions are especially important because of the forthcoming revision of the SNA.
- NA/30 Regional income concepts, Bloem, Adriaan M. and Bas De Vet (1989).**
In this paper, the conceptual and statistical problems involved in the regionalization of national accounting variables are discussed. Examples are the regionalization of Gross Domestic Product, Gross National Income, Disposable National Income and Total Income of the Population.

- NA/31 The use of tendency surveys in extrapolating National Accounts**, Ouddeken, Frank and Gerrit Zijlmans (1989).
This paper discusses the feasibility of the use of tendency survey data in the compilation of very timely Quarterly Accounts. Some preliminary estimates of relations between tendency survey data and regular Quarterly Accounts-indicators are also presented.
- NA/32 An economic core system and the socio-economic accounts module for the Netherlands**, Gorter, Cor N. and Paul van der Laan (1989).
A discussion of the core and various types of modules in an overall system of economy related statistics. Special attention is paid to the Dutch Socio-economic Accounts. Tables and figures for the Netherlands are added.
- NA/33 A systems view on concepts of income in the National Accounts**, Bos, Frits (1989).
In this paper, concepts of income are explicitly linked to the purposes of use and to actual circumstances. Main choices in defining income are presented in a general system. The National Accounts is a multi-purpose framework. It should therefore contain several concepts of income, e.g. differing with respect to the production boundary. Furthermore, concepts of national income do not necessarily constitute an aggregation of income at a micro-level.
- NA/34 How to treat borrowing and leasing in the next SNA**, Keuning, Steven J. (1990).
The use of services related to borrowing money, leasing capital goods, and renting land should not be considered as intermediate inputs into specific production processes. It is argued that the way of recording the use of financial services in the present SNA should remain largely intact.
- NA/35 A summary description of sources and methods used in compiling the final estimates of Dutch National Income 1986**, Gorter, Cor N. and others (1990).
Translation of the inventory report submitted to the GNP Management Committee of the European Communities.
- NA/36 The registration of processing in supply and use tables and input-output tables**, Bloem, Adriaan M., Sake De Boer and Pieter Wind (1993).
The registration of processing is discussed primarily with regard to its effects on input-output-type tables and input-output quotes. Links between National Accounts and basic statistics, user demands and international guidelines are examined. Net recording is in general to be preferred. An exception has to be made when processing amounts to a complete production process, e.g. oil refineries in the Netherlands.
- NA/37 A proposal for a SAM which fits into the next System of National Accounts**, Keuning, Steven J. (1990).
This paper shows that all flow accounts which may become part of the next System of National Accounts can be embedded easily in a Social Accounting Matrix (SAM). In fact, for many purposes a SAM format may be preferred to the traditional T-accounts for the institutional sectors, since it allows for more flexibility in selecting relevant classifications and valuation principles.
- NA/38 Net versus gross National Income**, Bos, Frits (1990).
In practice, gross figures of Domestic Product, National Product and National Income are most often preferred to net figures. In this paper, this practice is challenged. Conceptual issues and the reliability of capital consumption estimates are discussed.
- NA/39 Concealed interest income of households in the Netherlands; 1977, 1979 and 1981**, Kazemier, Brugt (1990).
The major problem in estimating the size of hidden income is that total income, reported plus unreported, is unknown. However, this is not the case with total interest income of households in the Netherlands. This makes it possible to estimate at least the order of magnitude of this part of hidden income. In this paper it will be shown that in 1977, 1979 and 1981 almost 50% of total interest received by households was concealed.

NA/40 Who came off worst: Structural change of Dutch value added and employment during the interwar period, Den Bakker, Gert P. and Jan de Gijt (1990).

In this paper new data for the interwar period are presented. The distribution of value added over industries and a break-down of value added into components is given. Employment by industry is estimated as well. Moreover, structural changes during the interwar years and in the more recent past are juxtaposed.

NA/41 The supply of hidden labour in the Netherlands: a model, Kazemier, Brugt and Rob van Eck (1990).

This paper presents a model of the supply of hidden labour in the Netherlands. Model simulations show that the supply of hidden labour is not very sensitive to cyclical fluctuations. A tax exempt of 1500 guilders for second jobs and a higher probability of detection, however, may substantially decrease the magnitude of the hidden labour market.

NA/42 Benefits from productivity growth and the distribution of income, Keuning, Steven J. (1990).

This paper contains a discussion on the measurement of multifactor productivity and sketches a framework for analyzing the relation between productivity changes and changes in the average factor remuneration rate by industry. Subsequently, the effects on the average wage rate by labour category and the household primary income distribution are studied.

NA/43 Valuation principles in supply and use tables and in the sectoral accounts, Keuning, Steven J. (1991).

In many instances, the valuation of transactions in goods and services in the national accounts poses a problem. The main reason is that the price paid by the purchaser deviates from the price received by the producers. The paper discusses these problems and demonstrates that different valuations should be used in the supply and use tables and in the sectoral accounts.

NA/44 The choice of index number formulae and weights in the National Accounts. A sensitivity analysis based on macro-economic data for the interwar period, Bakker, Gert P. den (1991).

The sensitivity of growth estimates to variations in index number formulae and weighting procedures is discussed. The calculations concern the macro-economic variables for the interwar period in the Netherlands. It appears, that the use of different formulae and weights yields large differences in growth rates. Comparisons of Gross Domestic Product growth rates among countries are presently obscured by the use of different deflation methods. There exists an urgent need for standardization of deflation methods at the international level.

NA/45 Volume measurement of government output in the Netherlands; some alternatives, Kazemier, Brugt (1991).

This paper discusses three alternative methods for the measurement of the production volume of government. All methods yield almost similar results: the average annual increase in the last two decades of government labour productivity is about 0.7 percent per full-time worker equivalent. The implementation of either one of these methods would have led to circa 0.1 percentage points higher estimates of economic growth in the Netherlands.

NA/46 An environmental module and the complete system of national accounts, Boo, Abram J. De, Peter R. Bosch, Cor N. Gorter and Steven J. Keuning (1991).

A linkage between environmental data and the National Accounts is often limited to the production accounts. This paper argues that the consequences of economic actions on ecosystems and vice versa should be considered in terms of the complete System of National Accounts (SNA). One should begin with relating volume flows of environmental matter to the standard economic accounts. For this purpose, a so-called National Accounting Matrix including Environmental Accounts (NAMEA) is proposed. This is illustrated with an example.

- NA/47 Deregulation and economic statistics: Europe 1992**, Bos, Frits (1992).
The consequences of deregulation for economic statistics are discussed with a view to Europe 1992. In particular, the effects of the introduction of the Intrastat-system for statistics on international trade are investigated. It is argued that if the Statistical Offices of the EC-countries do not respond adequately, Europe 1992 will lead to a deterioration of economic statistics: they will become less reliable, less cost effective and less balanced.
- NA/48 The history of national accounting**, Bos, Frits (1992).
At present, the national accounts in most countries are compiled on the basis of concepts and classifications recommended in the 1968-United Nations guidelines. In this paper, we trace the historical roots of these guidelines (e.g. the work by King, Petty, Kuznets, Keynes, Leontief, Frisch, Tinbergen and Stone), compare the subsequent guidelines and discuss also alternative accounting systems like extended accounts and SAMs.
- NA/49 Quality assessment of macroeconomic figures: The Dutch Quarterly Flash**, Reininga, Ted, Gerrit Zijlmans and Ron Janssen (1992).
Since 1989-IV, the Dutch Central Bureau of Statistics has made preliminary estimates of quarterly macroeconomic figures at about 8 weeks after the end of the reference quarter. Since 1991-II, a preliminary or "Flash" estimate of GDP has been published. The decision to do so was based on a study comparing the Flash estimates and the regular Quarterly Accounts figures, which have a 17-week delay. This paper reports on a similar study with figures through 1991-III.
- NA/50 Quality improvement of the Dutch Quarterly Flash: A Time Series Analysis of some Service Industries**, Reininga, Ted and Gerrit Zijlmans (1992).
The Dutch Quarterly Flash (QF) is, just like the regular Quarterly Accounts (QA), a fully integrated statistic based on a quarterly updated input-output table. Not all short term statistics used to update the QA's IO-table are timely enough to be of use for the QF, so other sources have to be found or forecasts have to be made. In large parts of the service industry the latter is the only possibility. This paper reports on the use of econometric techniques (viz. series decomposition and ARIMA modelling) to improve the quality of the forecasts in five parts of the service industry.
- NA/51 A Research and Development Module supplementing the National Accounts**, Bos, Frits, Hugo Hollanders and Steven Keuning (1992).
This paper presents a national accounts framework fully tailored to a description of the role of Research and Development (R&D) in the national economy. The framework facilitates to draw macro-economic conclusions from all kinds of data on R&D (also micro-data and qualitative information). Figures presented in this way can serve as a data base for modelling the role of R&D in the national economy.
- NA/52 The allocation of time in the Netherlands in the context of the SNA; a module**, Kazemier, Brugt and Jeanet Exel (1992).
This paper presents a module on informal production, supplementing the National Accounts. Its purpose is to incorporate informal production into the concepts of the SNA. The relation between formal and informal production is shown in the framework of a Social Accounting Matrix (SAM). To avoid a controversial valuation of informal production, the module consists of two SAMs. One expressed in actual prices with informal labour valued zero, and one which expresses the embedded informal labour input measured in terms of hours worked.
- NA/53 National Accounts and the environment: the case for a system's approach**, Keuning, Steven J. (1992).
The present set of main economic indicators should be extended with one or a few indicators on the state of the environment. This paper lists various reasons why a so-called Green Domestic Product is not suitable for this purpose. Instead, a system's approach should be followed. A National Accounting Matrix including Environmental Accounts (NAMEA) is presented and the way to derive one or more separate indicators on the environment from this information system is outlined.

- NA/54 How to treat multi-regional units and the extra-territorial region in the Regional Accounts?**, De Vet, Bas (1992).
This paper discusses the regionalization of production and capital formation by multi-regional kind-of-activity units. It also examines the circumstances in which a unit may be said to have a local kind-of-activity unit in the extra-territorial region and what should be attributed to this "region".
- NA/55 A historical Social Accounting Matrix for the Netherlands (1938)**, Den Bakker, Gert P., Jan de Gijt and Steven J. Keuning (1992).
This paper presents a Social Accounting Matrix (SAM) for the Netherlands in 1938, including related, non-monetary tables on demographic characteristics, employment, etc. The distribution of income and expenditure among household subgroups in the 1938 SAM is compared with committant data for 1987.
- NA/56 Origin and development of the Dutch National Accounts**, Den Bakker, Gert P. (1992).
This paper describes the history of national accounting in the Netherlands. After two early estimates in the beginning of the nineteenth century, modern national accounting started in the 1930s on behalf of the Tinbergen model for the Dutch economy. The development spurred up after World War II to provide data to the government for economic planning purposes. In the 1980s, the development was towards a flexible and institutional approach.
- NA/57 Compiling Dutch Gross National Product (GNP); summary report on the final estimates after the revision in 1992**, Bos, Frits (1992).
This summary report describes the sources and methods used for compiling the final estimate of Dutch Gross National Product after the revision of the Dutch National Accounts in 1992. Attention is focused on the estimation procedures for 1988. A more extensive report is also available (NA/57_Ext.).
- NA/57_Ext. Compiling Dutch Gross National Product (GNP); full report on the final estimates after the revision in 1992**, Bos, Frits and Cor Gorter (1993).
This report describes the compilation of the final estimate of Dutch Gross National Product after the revision of the Dutch National Accounts in 1992. Attention is focused on the estimation procedures for 1988. The description covers i.a. data sources, sampling features of the surveys, grossing up procedures, adjustments for underreporting and the integration process.
- NA/58 The 1987 revision of the Netherlands' National Accounts**, Van den Bos, C and P.G. Al (1994).
The 1987 revision that was completed in 1992 has improved the Dutch National Accounts in three ways. First, new and other data sources have been used, like Production statistics of service industries, the Budget Survey and Statistics on fixed capital formation. Secondly, the integration process has been improved by the use of detailed make- and use-tables instead of more aggregate input-output tables. Thirdly, several changes in bookkeeping conventions have been introduced, like a net instead of a gross registration of processing to order.
- NA/59 A National Accounting Matrix for the Netherlands**, Keuning, Steven and Jan de Gijt (1992).
Currently, the national accounts typically use two formats for presentation: matrices for the Input-Output tables and T-accounts for the transactions of institutional sectors. This paper demonstrates that presently available national accounts can easily be transformed into a National Accounting Matrix (NAM). This may improve both the transparency and analytic usefulness of the complete set of accounts.
- NA/60 Integrated indicators in a National Accounting Matrix including environmental accounts (NAMEA); an application to the Netherlands**, De Haan, Mark, Steven Keuning and Peter Bosch (1993).
In this paper, environmental indicators are integrated into a National Accounting Matrix including Environmental Accounts (NAMEA) and are put on a par with the major aggregates in the national accounts, like National Income. The environmental indicators reflect the goals of the environmental policy of the Dutch government. Concrete figures are presented for 1989. The NAMEA is optimally suited as a data base for modelling the interaction between the national economy and the environment.

- NA/61 Standard national accounting concepts, economic theory and data compilation issues; on constancy and change in the United Nations-Manuals on national accounting (1947, 1953, 1968 and 1993), Bos, Frits (1993).**
In this paper, the four successive guidelines of the United Nations on national accounting are discussed in view of economic theory (Keynesian analysis, welfare, Hicksian income, input-output analysis, etc.) and data compilation issues (e.g. the link with concepts in administrative data sources). The new guidelines of the EC should complement those of the UN and be simpler and more cost-efficient. It should define a balanced set of operational concepts and tables that is attainable for most EC countries within 5 years.
- NA/62 Revision of the 1987 Dutch agricultural accounts, Pauli, Peter and Nico van Stokrom (1994).**
During the recent revision of the Dutch national accounts, new agricultural accounts have been compiled for the Netherlands. This paper presents the major methodological and practical improvements and results for 1987, the base year for this revision. In addition, this paper demonstrates that a linkage can be established between the E.C. agricultural accounting system and the agricultural part of the standard national accounts.
- NA/63 Implementing the revised SNA in the Dutch National Accounts, Bos, Frits (1993).**
This paper discusses the implementation of the new United Nations guidelines on national accounting (SNA) in the Netherlands. The changes in basic concepts and classifications in the SNA will be implemented during the forthcoming revision. The changes in scope will be introduced gradually. Important changes scheduled for the near future are the incorporation of balance sheets, an environmental module and a Social Accounting Matrix.
- NA/64 Damage and insurance compensations in the SNA, the business accounts and the Dutch national accounts, Baris, Willem (1993).**
This paper describes the recording of damages to inventories and produced fixed assets in general, including damages as a result of legal product liability and of the liability for damage to the environment. In this regard, the 1993 System of National Accounts and the practice of business accounting are compared with the Dutch national accounts.
- NA/65 Analyzing economic growth: a description of the basic data available for the Netherlands and an application, Van Leeuwen, George, Hendrie van der Hoeven and Gerrit Zijlmans (1994).**
This paper describes the STAN project of the OECD and the Dutch national accounts data supplied to the STAN database, which is designed for a structural analysis of the role of technology in economic performance. Following an OECD analysis for other industrial countries, the importance of international trade for a small open economy such as the Netherlands is investigated. The STAN database is also available on floppy disk at the costs of DFL. 25, an can be ordered by returning the order form below (Please mention: STAN floppy disk).
- NA/66 Comparability of the sector General Government in the National Accounts, a case study for the Netherlands and Germany, Streppel, Irene and Dick Van Tongeren (1994).**
This paper questions the international comparability of data concerning the sector General Government in the National Accounts. Two differences are distinguished: differences due to lack of compliance with international guidelines and institutional differences. Adjustments to National Accounts data are reflected in a separate module which compares Germany versus The Netherlands. The module shows that total General Government resources as well as uses are substantially higher in the Netherlands.
- NA/67 What would Net Domestic Product have been in an environmentally sustainable economy?, Preliminary views and results, De Boer, Bart, Mark de Haan and Monique Voogt (1994).**
Sustainable use of the environment is a pattern of use that can last forever, at least in theory. This pattern is likely to render a lower net domestic product than the present economy. The coherence between reductions in pressure on the environment and changes in net domestic product is investigated with the help of a simple multiplier model. This model is based on a National Accounting Matrix including Environmental Accounts (NAMEA).

- NA/68 A Social Accounting Matrix for the Netherlands, concepts and results**, Timmerman, Jolanda G. and Peter J.M. van de Ven (1994).
In this paper a Social Accounting Matrix (SAM) for the Netherlands is presented. Two years are covered: 1988 and 1990. The SAMs integrate statistics on the distribution of income, and consumption expenditure among various household groups in a national accounts framework. Simultaneously, labour income and employment are disaggregated into several labour categories.
- NA/69 Analyzing relative factor inputs of Dutch exports: An application of the 1990 Social Accounting Matrix for the Netherlands** (forthcoming), Reininga, Ted (1994).
In this paper the validity of neoclassical trade theory for explaining Dutch international trade patterns is studied. The analysis is carried out with the use of a Social Accounting Matrix for The Netherlands. This study corroborates the outcome of other recent analysis in this field: classical trade theory offers a better starting-point to understand Dutch trade patterns than neoclassical trade theory. Moreover, these recent studies point to the increasing relevance of insights derived from modern trade theory. The results presented here seem to support this point of view.
- NA/70 SESAME for the evaluation of economic development and social change**, Keuning, Steven J. (1994).
This paper elaborates on the concept of a System of Economic and Social Accounting Matrices and Extensions, or SESAME for short. The SESAME-concept serves to meet the criticism that conventional national accounts take a too limited view at social, environmental and economic development. SESAME details the monetary accounts and couples non-monetary information in an integral system approach. SESAME is meant as a synthesis of national accounts and the social indicators approach.
- NA/71 New revision policies for the Dutch National Accounts**, Den Bakker, Gert P., Jan de Gijt and Robert A.M. van Rooijen (1994).
This paper presents the (new) revision policy for the Dutch National Accounts. In the past, several major revisions of national accounting data have been carried out in the Netherlands. In the course of time, the policy has changed several times. Recently, the aim has become to publish relatively long time-series shortly after the publication of the revised benchmark year data.
- NA/72 Labour force data in a National Accounting framework**, Den Bakker, Gert P. and Jan de Gijt (1994).
This paper deals with the Dutch interwar labour force data. Starting with census data the estimation of the working and non-working labour force by industry and by occupational type is described and the results are discussed. The data have been estimated within the national accounts framework. It is the first time that labour market figures at a meso-level have been estimated which are linked to other national accounting figures.
- NA/73 Integrated estimates of productivity and terms-of-trade changes from a Social Accounting Matrix at constant prices**, Keuning, Steven J. (1994).
This paper demonstrates that measures of real income change for the total economy can best be derived from real income changes per subsector. For this purpose a Social Accounting Matrix (SAM) at constant prices has been compiled. By breaking down value added at constant prices into constant price estimates for each primary input category, productivity changes by industry can be estimated as an integral part of the regular national accounts compilation. The national total trading gain or loss from a change in the terms of trade is as well allocated to subsectors, thus embedding the estimation of this macro-measure into a meso-consistency framework. These ideas have been applied in a case-study for Indonesia.
- NA/74 Taking the environment into account: The Netherlands NAMEA's for 1989, 1990 and 1991**, De Haan, Mark and Steven Keuning (1995).
The National Accounting Matrix including Environmental Accounts (NAMEA) contains figures on environmental burdens in relation to economic developments as reflected in the National accounts. NAMEA's for the Netherlands in 1989, 1990 and 1991 have now been completed. They include a more detailed industrial classification and a series of environment taxes and levies, plus environmental protection expenditures by industry and households. Further, the depletion of two important mineral resources in the Netherlands is now incorporated in the NAMEA's.

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