The Netherlands

Sources of information

- Wijngaart, R. van den; Ybema, J.R. (2002) Reference projection for greenhouse gases in the Netherlands — Emission projections for the period 2001–2010 (RIVM/ECN 2002)
- Ministry of Housing, Spatial Planning and Environment (February 2002): The progress of the Netherlands climate change policy — an assessment at the 2002 evaluation moment (MHSPE 2002)
- Third National Communication of the Netherlands to the UNFCCC, October 2001
- The Netherlands' Climate Policy Implementation Plan, part I (NCPIP, June 1999)
- The Dutch Assault on greenhouse gases (4th quarter of 1999);
- several brief introductions to each sector from the Internet (http://www.minvrom.nl/minvrom/pagina.html?id=1314, loaded on 10 April 2000)
- EEA Assessment of EC and Member States Green house Gas Emission Trends 1990–1998; Final Draft 12 May 2000
- Second National Communication of the Netherlands to the UNFCCC, 1997
- Interview with Paul G. Ruyssenaars, Ministry of Housing, Spatial Planning and the Environment (MINVROM) of the Netherlands on 14 June 2000; as well as comments from the same expert on the draft report, received in August 2000
- Interview with Michiel Beeldman, Dutch Energy Research Foundation, Policy Studies (ECN), on 27 June 2000

Quality and transparency of reporting

Information on policies and measures has been taken from the Third National Communication and is summarised in Table 1.

Table 1: Information provided on policies and measures

Information provided	Level provided	Comments
Policy names	++	P&Ms for the 'with measures' projection are given in detail; however, which P&Ms are considered in the 'with additional measures' projection is not clear
Objectives of policies	++	Described in the text and in overview table
Which GHGs?	CO_2, CH_4, N_2O, HFC, PFC, SF_6, SO_2	
Status of implementation	+++	Status of implementation is given in detail (however, year of implementation or adoption and budget means allocated to individual measures are not stated)
Implementation body specified	+++	
Quantitative assessment of implementation	+++	Reduction in 2010 is given
Interaction with other P&Ms discussed	–	

+, ++, +++ level of information available increases as the number of + signs increases

Information on projections is provided in MHSPE 2002. The level of information about these projections is summarised in Table 2.

Table 2: Information provided on projections

Category of information	Level of information provided	Comments
Scenarios considered	with measures (with additional measures)	In MHSPE (2002) a new reference projection has been developed; it considers the P&Ms of the NCPIP where decisions have been taken before July 1, 2001; effects of P&Ms in preparation have been taken into account only on an aggregated level
Expressed relative to inventory for previous years	+++	
Starting year	1995	
Split of projections	+++	**7 sectors for CO_2, CH_4, N_2O and for F-gases**
Presentation of results	+++	1 tables with sectors down and greenhouse gases horizontal as overview on effects of P&Ms
Description of model (level of detail, approach and assumptions)	+++	No statement on the models used (but a source is given); split of sectors is not completely clear
Discussion of uncertainty	+++	The exogenous developments taken into account in the uncertainty range are the: • industrial sector growth or recession • electricity prices in surrounding countries • natural gas and oil prices • competitive position Dutch refining sector • industrial structure effects • effectiveness of energy policy • intensity of renewable energy policies in other countries and tradability • autonomous growth in vehicle kilometres • greenhouse horticulture reaction to gas market • growth of new energy functions in the services sector (ICT) • market imperfection in Dutch electricity sector • success of technical developments in off-shore wind energy
Details of parameters and assumptions	+++	The most important assumptions are stated

+, ++, +++ level of information available increases as the number of + signs increases

Assessment of policies and measures

The new Dutch Climate strategy described in the National Climate Policy Implementation Plan (NCPIP), part I, involves four main components:

- the 'basic package', which includes P&Ms that are planned to be implemented
- the 'reserve package', which includes measures that can be implemented if at one of two evaluation 'moments' (2002 and 2005) it becomes likely that the country might not achieve its commitment
- an 'innovation package' for the long term climate strategy (beyond the first commitment period)
- a decision to approach 50 % of the predicted reduction requirements by the use of 'Flexible Mechanisms'.

Both the strategy and the evaluation of climate policy have passed Parliament. All measures in the basic package except for road pricing (kilometre tax) have now been implemented.

Measures in the 'basic package' have been assessed by RIVM (National Institute for Public Health and the Environment) and ECN (Netherlands Energy Research Foundation) with regard to the range of expected effects assuming the measure is implemented. The range noted by the institutes takes into account the uncertainty about the ultimate form the measure will take in one case (the kilometre tax, which is still being prepared) and uncertainty about the extent of compliance and enforcement in the other cases. According to the institutes, the largest uncertain reduction potential includes measures at coal-fired power plants (6 Mt), renewable energy (1.2 Mt) and energy savings in different sectors (2.8 Mt).

Table 3: Summary of the effect of policies and measures included in the projections (Mt CO_2 equivalent)

	With measures	With additional measures
Industry (including refineries)	8.0	n/a
Energy and waste companies	3.0	n/a
Agriculture	0.0	n/a
Traffic	1.0	n/a
Households	1.0	n/a
Trade, services, government	1.0	n/a
Other	0.0	n/a
Total	**14.0**	**17.0 to 20.0**

Source: MHSPE 2002

Table 4 gives a detailed overview on the P&Ms of the 'basic package' which are considered in the 'with additional measures scenario'. The effects of P&Ms summarised in table 3 are taken from a more recent projection (MHSPE 2002). Thus, they are not fully consistent with CO_2 savings given for each measure in table 4 which are taken form the Third National Communication.

Table 4: Detailed information on polices and measures

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (Mt CO_2)		CCPM
							With measures projection 2010	With additional measures projection 2010	
Policies and measures in the with measures and the with additional measures projection									
Energy (1.A.1.a.)	5 % renewables in 2010	Decrease emissions through increased market share for renewable energy	CO_2	1. economic 2. fiscal 3. voluntary 4. other 5. other	1. implemented 2. implemented 3. implemented 4. adopted 5. adopted	National government, provincial government, energy companies, housing corporations	2.00	0.00–0.30	Yes
Energy (1.A.1.a.)	Measures at coal-fired power plants	Decrease emissions through fuel switch and efficiency improvement	CO_2	1. voluntary 2. fiscal 3. regulatory	1. adopted 2. implemented 3. implemented	National government, owners of coal-fired plants	0.80	0.70–1.70	Yes
Energy (1.B.2.)	Emissions from oil and gas production	Identify reduction potential	CH_4	1. other	1. planned	National government		0.15	No
Transport (1.A.3.)	EU agreement on fuel efficient cars	Reduce CO2 emissions from new cars by 25 % per kilometre between 1995 and 2008	CO_2	1. voluntary	1. implemented	European Commission car manufacturers	1.20		Yes
Transport (1.A.3.)	CO_2 differentiation in vehicle tax and car labelling	Encourage purchases of fuel-efficient cars	CO_2	1. fiscal 2. regulatory	1. adopted 2. implemented	National government, car dealers			Yes

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (Mt CO_2)		CCPM
							With measures projection 2010	With additional measures projection 2010	
Transport (1.A.3.)	Encouraging in-car instruments	Promote monitoring instruments for fuel efficient driving behaviour	CO_2	1. fiscal 2. voluntary	1. implemented	National government, car dealers, garages			Yes
Transport (1.A.3.)	Tax measures to limit passenger traffic	Discourage commuter traffic and personal use of company cars	CO_2	1. fiscal	1. implemented	National government			No
Transport (1.A.3.)	Increased tyre pressure	Reduce road friction and energy consumption	CO_2	1. voluntary 2. education	1. implemented 2. implemented	National government, car dealers, garages			No
Transport (1.A.3.)	Road pricing	Improve access to cities and reduce congestion	CO_2	1. other	1. adopted	National government		0.70–1.50	No
Transport (1.A.3.)	Stepped up enforcement of speed limits	Reduce speeding and save fuel	CO_2	1. regulatory	1. implemented	National government			No
Transport (1.A.3.)	Traffic and transport projects in CO_2 reduction plan	Improve logistics efficiency of goods transport, improve driving behaviour	CO_2	1. economic 2. education	1. implemented 2. adopted	National government, NOVEM, Senter		0.20–0.30	No
Transport (1.A.3.)	Reduction of emissions from catalytic converters	Further European regulations	NO_x	1. other	1. planned		0.00		No

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (Mt CO_2)		CCPM
							With measures projection 2010	With additional measures projection 2010	
Industry (1.A.2.)	Energy savings in industry	Attain 'world top' by 2012 in most energy-intensive sectors; take all measures in other sectors with internal rate of return > 15 % after taxes	CO_2	1. voluntary 2. voluntary 3. regulatory 4. fiscal	1. implemented 2. implemented 3. implemented 4. implemented	National government, provincial government, industry, NOVEM	1.40	0.05–0.20	Yes
Industry (1.A.2.)	Reduction of HFC, PFC as (H)CFC alternatives	Improve knowledge about emissions and reduction possibilities and realise as much reduction potential as possible	HFC, PFC	1. other 2. regulatory 3. voluntary 4. economic 5. fiscal	1. planned 2. adopted 3. adopted 4. implemented 5. implemented	National government, provincial government, industry	1.00		Yes
Industry (2.)	Reduction of PFCs from the aluminium industry	Adjustments to production process	PFC	1. voluntary 2. regulatory		National government, provincial government, industry	1.20		Yes
Industry (2.)	Reduction of HFCs from processes	Install/optimise afterburner	HFC	1. regulatory	1. implemented	Provincial government, industry	3.60		Yes

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (Mt CO_2)		CCPM
							With measures projection 2010	With additional measures projection 2010	
Industry (2.)	SF_6 from chips industry and heavy current technology	Identify reduction potential	SF_6	1. other	1. planned	National government, industry, research institutes		0.20–0.30	Yes
Agriculture (4.)	Energy savings in greenhouse horticulture	To improve energy efficiency by 65 % between 1980 and 2010	CO_2	1. voluntary 2. regulatory 3. other 4. fiscal 5. economic	1. implemented 2. adopted 3. adopted		0.10	0.00–0.80	Yes
Forestry (5.)	CO_2 sequestration	Accelerate afforestation in the Netherlands	CO_2	1. other 2. fiscal	1. implemented 2. implemented	National government	Not analysed		No
Waste (6.)	Emissions from former dumpsites	Identify reduction CH_4 potential	CH_4	1. other	1. planned	National government, research institutes		0.50–1.50	Yes
Energy (1.A.4.b.)	Energy Performance Advice	Energy in existing households	CO_2	1. voluntary 2. fiscal	1. implemented 2. implemented	Energy companies, National government	1.0	0.05–0.20	Yes
Energy (1.A.4.b.)	Encouraging energy-efficient appliances	Increase penetration of most efficient appliances	CO_2	1. regulatory 2. fiscal	1. implemented 2. implemented	National government, retailers	0.80		Yes
Energy (1.A.4.a.)	Energy Performance Advice	Save energy in existing non-residential buildings	CO_2	1. voluntary 2. fiscal 3. regulatory	1. implemented 2. implemented	Energy companies, National government	0.70	0.03–0.10	Yes

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (Mt CO_2)		CCPM
							With measures projec-tion 2010	With additional measures projection 2010	
Energy (1.A.)	Promotion of combined heat and power (CHP)	Encourage construction of new and continued use of existing CHP capacity	CO_2	1. fiscal	1. implemented	National government	0.50		Yes

Source: Third National Communication, RIVM/ECN 2002

Evaluation of projections

According to the with measures projection greenhouse gas emission will increase to 225 Mt CO_2 equivalent by 2010 (table 5). This is 6.1 % more than in the base year. With the additional measures implemented since July 2001 greenhouse gases will increase only to 219 or 222 Mt CO_2 equivalent (+0.9 or 2.3%).

Table 5: Summary of projections by gas in 2010 (Mt CO_2 equivalent)

	Base year	With measures	With additional measures
CO_2	159.0	191.0	n/a
CH_4	27.0	14.0	n/a
N_2O	17.0	15.0	n/a
HFC	4.0		
PFC	2.0	5.0	n/a
SF_6	0.0		
Total	**212.0**	**225.0**	**219.0 to 222.0**
% change relative to base year		6.1 %	0.9 to 2.3 %

Source: MHSPE 2002

Table 6 gives an overview of the contributions of individual sectors to the total GHG emissions in the two considered scenarios.

Table 6: Summary of projections by sector in 2010 (Mt CO_2 equivalent)

	Base year	With measures	% change relative to 1990	With additional measures	% change relative 1990 (additional measures)
Energy and waste management	57.0	56.0	–1.8 %	n/a	n/a
Industry and refineries	67.0	77.0	14.9 %	n/a	n/a
Transport	30.0	40.0	33.3 %	n/a	n/a
Trade, services, government	7.0	10.0	42.9 %	n/a	n/a
Households	20.0	20.0	0.0 %	n/a	n/a
Agriculture	27.0	20.0	–25.9 %	n/a	n/a
Other	4.0	2.0	–50.0 %	n/a	n/a
Total	**212.0**	**225.0**	**6.1 %**	**219.0 to 222.0**	**0.9 % to 2.3 %**

Source: MHSPE 2002

In table 7 the results of the target assessment are given. In the 'with measures scenario' the total greenhouse gas emissions will be 13% above the target (–6%). Through additional measures GHG emissions can be further reduced by 3 to 6 Mt CO_2 equivalent. However, the target (199 Mt CO_2 equivalent) will be failed by 10 percentage points if only domestic measures are taken into consideration. According to MHSPE (2002) the remaining gap will be closed by emission credits from flexible mechanisms.

Table 7: Assessment of the target

	Mt CO_2 equivalent	% of 1990 level (six gas basket)
Base year (from projections)	212	100
Commitment[1]	199	94
With existing P&Ms	225	106
Gap (-ve means no gap)	26	12
Effect of additional P&Ms	3 to 6	1 to 3

Description of modelling approach

The projections presented in NCPIP were based on the 'global competition' scenario of the Long-Term Outlook of the Dutch Central Planning Bureau' (CPB) because it provided a robust background against which to assess the effects of policies and measures. However, the global competition scenario has gradually become less suitable as a background for formulating and verifying climate policies for the medium term because there have been many changes in the energy market and the Dutch economy since the scenario was developed in 1995. As the global competition scenario no longer provides a good reference for assessing whether the Netherlands will be able to meet the Kyoto target with current policies a new reference scenario had to be developed in MHSPE (2002).

The new reference projection was made by the National Institute for Public Health and the Environment (RIVM) and the Netherlands Energy Research Foundation (ECN) at the request of the Ministries of Economic Affairs and Environment. It looks at emissions in the Netherlands and at the domestic policy measures aiming to influence those emissions. Possibilities for utilizing the Kyoto mechanisms are not addressed.

RIVM and ECN made two variants of the reference projection, one which does take the effect of NCPIP policies into account, and one which does not. The projections provide an estimate of developments in energy consumption, energy prices, energy conservation, fuel mix and emissions during the next ten years. Because the projection is intended as a policy reference, it is based on central assumptions regarding socio-economic developments, world energy prices, technological developments and so forth.

The assumptions regarding economic developments during the coming years are largely in line with the optimistic variant of the Central Planning Bureau's (CPB) estimates for the medium term (MLT). Developments which are good for the economy often lead to higher emissions. CO_2 emissions are, after all, still linked to economic growth, although the link is getting relatively weaker. Therefore, robust climate policies need to be based on optimistic assumptions about future economic developments. In the optimistic variant of the MLT the economy is assumed to grow by an average of 2.75 % per year in the years 2003–2010. This is a conservative strategy from the point of view of climate policies.

The modelling parameters for the projections are given in table 8.

[1] The base year value to calculate the target (212 Mt CO_2 equiv.) was different to the base year value used in the projections (217 Mt CO_2 equiv.). According to the burden sharing agreement the Netherlands is obliged to reduce greenhouse gas emissions by 6% compared to it's 1990 level.

Table 8: Modelling parameters

Parameter	2001	2010	Unit
Economic indicators			
GDP	2.5	2.5	%/yr
Relevant world trade	6.5	6.5	%/yr
Labour volume	1.0	1.0	%/yr
Labour productivity market sector	1.9	1.9	%/yr
Value added			
Industry	2.5	2.5	%/yr
Services	3.0	3.0	%/yr
Government, health care	1.7	1.7	%/yr
Agriculture	1.8	1.8	%/yr
Construction	2.0	2.0	%/yr
Private consumption	3.1	3.1	%/yr
Socio-demographic indicators			
Population		16.6	million
Other indicators			
Passenger kilometres		122	billion
Tonne kilometres		35	billion
Livestock population		5.2	million
Price indicators			
Oil price		17 to 28	US$/bbl

Country conclusions

The Third National Communication is based on the National Climate Policy Implementation Plan (NCPIP), which was passed by the parliament in mid 1999 (Ruyssenaars). The 'basic package' contains various specific instruments of which several are nearly ready for implementation or have now been (partly) implemented.

The Netherlands programme is, according to the new projections in MHSPE 2002, designed to fill the gap of 40 Mt CO_2 equiv. that is expected to remain in 2010 after taking into account the effects of existing measures. Half of the gap (17 to 20 Mt CO_2 equiv.) will be met using domestic policies and measures and the other half using the Kyoto Mechanisms.

The strategy allows for possible adverse developments by setting a 'reserve package' aside, with measures that can quickly be adapted. This enables flexibility and also seems to cater for any problems related to the use of the Kyoto Mechanism use, since these measures could be used instead.

The Dutch Climate Strategy is not specifically targeted at addressing reporting requirements under the EU Monitoring Mechanism or the UNFCCC and therefore does not incorporate several requirements of the Monitoring Reports or the UNFCCC National Communications. On the other hand, it is easily accessible, and appears to be very consistent.

Detailed projections of individual policies and measures are reported in the Third National Communication. These projections are not consistent with the updated 'with measures' scenario presented in MHSPE 2002. Moreover, there is no clear classification of P&Ms according to the UNFCCC implementation status criteria or the status criteria used in this study (or with a 'benchmark' year). Nevertheless there is a relatively clear description of implementation stages. The same applies to the type of instrument column of the P&M table. Although not completely consistent with the guidelines the criteria given there can be easily and clearly identified and understood.