Reports to the Government

Environmental policy: strategy, instruments and enforcement

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Summary of the 41th Report

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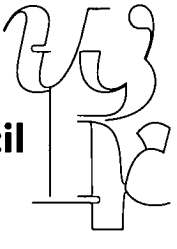


Contents

Summary

This report, 'Environmental policy: strategy, instruments and enforcement', has four central themes:

1. environmental policy is mainly concerned with influencing the *behaviour* of institutions and individuals in terms of their patterns of production and consumption;
2. the *choice of instruments* employed to influence behaviour can be rationalised on the basis of *situation characteristics*;
3. the *area in which policy is implemented* (its jurisdiction) determines how instruments can best be deployed, although it can be adjusted to suit the needs of policy through determined efforts at environmental diplomacy.

These three elements mean that much greater emphasis must be placed on instruments other than direct regulation. Little is known about the effectiveness of such instruments. This therefore means that:

4. environmental policy should take the form of a *learning process*, in which the choice of instruments is not based automatically on predetermined objectives, but in which the deployment of instruments also has a bearing on the setting of objectives.

These four themes are discussed in more detail below.

Environmental problems as behavioural problems
The Netherlands Scientific Council for Government Policy regards environmental problems primarily as behavioural problems. Such problems arise because the environment is not an important enough factor in the choices made by manufacturers and consumers. However, adopting this approach does entail the risk that the problems of cleaning up environmental damage inflicted in the past will be ignored.

The behavioural changes required to achieve the objectives of environmental policy can be brought about in three ways: through *coercion or authority* in the form of bans and obligations (direct regulation); through *exchange*, whereby transactions are made subject to sanctions (private law and financial regulations); and through *information, consultation and persuasion* (social regulation). With this last type of regulation, the result depends on how those involved respond to social pressure.

To date government has sought to tackle environmental problems mainly by means of coercion. This has led to more work for government agencies, particularly in terms of enforcement. Furthermore, this mechanism is not suited to the type of problems government is seeking to address; the many behavioural changes needed cannot be enforced on society by decree.

If we are to achieve sustainable development, we will have to restrict our use of the environment. This idea must be built into the social structure and order. The conflict between the scarcity of environmental resources and our use of them must therefore be made clear. Government must define the *environmental space* which we can reasonably exploit: which of those

elements of the environment which are not reflected in market prices can be exploited without jeopardising our aim of sustainability? Only if they know this, can social actors take the environment into account when making choices.

The environmental issue is thus basically portrayed as a matter of improving (1) the availability of information, (2) internalisation of environmental values and (3) enforceability. This means that environmental policy must concentrate on reducing the burden of enforcement which falls upon the government by internalising environmental values in the market mechanism. The question is therefore one of establishing how public administration can best exploit the potential of different instruments to make environmental problems manageable to the extent that they are reflected in the behaviour of individuals and organisations. This brings us to the second central theme of this report.

Instruments

The Council has not opted to devise a set of instruments for each proposal and plan published in or at the time of the Dutch National Environmental Policy Plan. It has instead developed a system of classification to assist in the selection of instruments. This classification system is based on the characteristics of the instruments themselves as well as of the environmental problems they are designed to tackle. Ultimately, the package of instruments chosen must also conform to the general criteria of good management (effectiveness, efficiency and legitimacy).

The available policy instruments are examined from two angles:

1. government as part of the system of public law, guardian of structures set up under private law and as a participant (market party) in the social process;
2. coercion, exchange and persuasion.

Direct regulation, financial instruments, regulations governed by private law and instruments aimed at persuasion represent a decreasing scale of enforcement on the part of the government, and an increasing degree of responsibility on the part of individuals, companies and other organisations for ensuring that environmental values are adequately reflected in society.

The burden of enforcement for a government is greatest in the case of *direct regulation*, such as bans and licensing systems. This undermines the effectiveness of this instrument, which theoretically has great potential. Direct regulation should therefore be used with restraint. However, the more essential the desired behavioural change - because, for instance, there is an enormous risk, or a need for urgent action, or a particularly bad case of pollution - the more reason there will be to exploit the potential effectiveness of direct regulation.

Financial transaction mechanisms such as charges and subsidies involve fewer enforcement responsibilities for a government. Collecting a consumer tax generally entails less work than administering a licensing system. Any enforcement problems which do arise in connection with financial regulations can often be restricted by intervening at another point in the

economic process. One great advantage of this type of instrument is that in the long term it provides an incentive for production and consumption to take place at the lowest possible cost in environmental terms. It therefore allows certain types of behaviour to be targeted.

The enforcement tasks of the government can be reduced even further by tackling environmental problems through transaction mechanisms governed by private law. The government then sets the rules and acts as 'referee', while enforcement is a matter for the social actors concerned. One essential condition for this type of mechanism to work is the availability of information on the environmental impacts of the activities of individual companies and organisations. Interested parties could seek a judicial ban on certain activities if certain limits were exceeded. Companies could also be held liable for the costs of bringing such an action. The Council believes that making companies publish information on the environmental effects of their activities would prevent unnecessary pollution. This would also lighten the load of the government services responsible for monitoring compliance with statutory limits.

The Council is aware that the private law approach is still in its infancy, but believes that it holds great potential. It would therefore call for the possibility of using private law instruments to incorporate responsibility for our environment into the social structure and order to be considered. Private law can play a particularly important role in encouraging efficient use and effective distribution of environmental resources.

One category of instruments currently in the ascendant which involves relatively little enforcement responsibilities for the government is *social regulation*. This type of instrument derives its strength from the growing environmental awareness of the public. There are two sides to these instruments, which are designed to persuade people to change their behaviour: (1) the communicative aspect which involves public education and information campaigns and environmental reporting and (2) the structural aspect, as expressed in gentlemen's agreements, covenants and other forms of agreement whereby parties undertake certain obligations. The Council would like to draw attention to the fact that this type of regulation is not being used to its full potential. An extension of the obligation for companies to publish information on the environmental impacts of their activities could boost the use of this instrument. The information could be used by the public to exert pressure on organisations which cause a lot of pollution.

Situation characteristics

Instruments cannot be assessed solely on their own merits. The characteristics of the problem they are designed to address are also very important. The Council has developed a method of choosing instruments which involves relating them to three types of situation characteristic:

1. the *recognisability* of emissions and effects;
2. the *structure* of the target group;
3. *resistance* from and *costs* to the target group.

This method involves only those aspects of selecting an instrument which can be approached objectively. Naturally, the ultimate choice will not be based only on rational considerations but also on political preferences.

The effectiveness of direct regulation and transaction instruments depends to a great extent on whether polluting activities are identifiable and measurable or accessible. If they can not easily be identified or measured, social regulation is more appropriate. However, there must be sufficient public support for social regulation to work. The structure of the target group is also important; this is determined by the number of sources of pollution and the number of individuals/companies to whom policy applies. If these figures are high, the 'second best' approach might have to be adopted (tackling input instead of output, or the wholesale rather than the retail trade) or powers might have to be devolved to representative bodies. The final important characteristic of environmental problems is the costs to the target group, in terms of the technological feasibility of and psychological resistance to change. In the case of financial regulation, high objective and subjective costs give rise to low price elasticity. This might lead one to the hasty conclusion that financial instruments are unsuitable in this type of situation. This is a misunderstanding, however. Low price elasticity is more likely to be an indication that a change in behaviour is not very feasible or popular, regardless of what instruments have been deployed. In such situations, direct regulation is likely to be evaded and social regulation disregarded. One may conclude that, if technological developments are difficult to predict or the costs vary sharply from one company to another, instruments aimed at transactions (charges and systems of liability) are effective and efficient because they ensure the lowest possible cost to society.

Analysing environmental problems on the basis of a number of relevant situation characteristics also enables the latter to be grouped. Situation characteristics do not usually exist in isolation. There are three characteristics which to a large degree determine what instruments should be chosen: the measurability or accessibility of activities, the number of sources and the costs to the target group. Situations targeted by environmental policy can be roughly classified on this basis. The aim is to reflect the role of a limited number of crucial circumstances. The classification can be regarded as a kind of 'preselection method' for the choice of instruments. Obviously, all situation characteristics have to be taken into consideration when making the ultimate choice.

This method and its application in four areas of environmental policy are examined more closely below. The four sectors examined face the most pressing environmental problems.

1. *Agriculture*

According to the situation characteristics method, the best way of tackling the problem of excess manure in the livestock industry is to use a combination of deposits and charges on surplus production. The deposit could be charged on the input of feed and artificial fertiliser and returned to farmers who use or process manure in a particularly sound way. Farmers

who produced excess manure would not be refunded the full amount, so in effect the deposit-refund system would also operate as a charge. Charges would also seem to be a promising way of reducing the use of pesticides, provided they are introduced at European level.

2. *Energy*
The method indicates that a regulatory energy tax is a suitable way of curbing greenhouse gas emissions, energy consumption and some acidifying emissions. However, the scale on which the tax is charged should be as big as or bigger than the scale on which ecological and economic effects occur, i.e. such a tax should be levied worldwide. Since it is doubtful whether enough countries will be prepared to introduce such a tax in the short or medium term, it is worth considering introducing it at a lower level. Any undesirable effects on the competitive position of companies could be prevented by a system of exemptions on some consumption.

3. *Waste*
Policy on the growing stream of domestic waste can, according to the situation characteristics method, best be conducted by using social regulation to encourage people to separate their waste, along with financial and private law instruments to reduce the overall volume of waste produced. For the policy to be credible, waste processing must be better organised.

4. *Cars*
Current policy will be a useful tool for curbing the growth of emissions from traffic, but will in all probability prove inadequate. If the emission objectives are to be met, extra measures will have to be taken, the most important of which would be a rise in fuel prices (partly through an energy tax). However, such a policy would not be able to operate effectively alongside what are in fact implicit subsidies, such as:

- the tax allowance for commuters;
- the failure to take into account the space required by traffic (e.g. parking space in urban areas);
- inadequate compensation rights for people injured in road accidents.

Applying the method to a number of environmental situations shows that financial and private law regulations can be used to tackle a relatively large number of problems. This conclusion contradicts current policy, in which direct regulation plays the key role. Furthermore, to be able to deploy the selected instruments effectively, consideration must be given to the level at which policy should be made and enforced (the jurisdiction) and how it can be adapted to suit the scale of the environmental problem in question. This is the third main theme of this report.

Jurisdiction
It is of vital importance to the efficiency, effectiveness and legitimacy of environmental policy that it is implemented at the most appropriate level. The Council has identified three possible policy perspectives, based on the international setting in which the Netherlands pursues its environmental policy:

1. the *national perspective*, at which foreign governments are not cooperative in solving environmental problems;

2. the *European perspective*, at which a joint policy is drawn up, but for a limited area;
3. the *global perspective*, at which an international policy on energy and environment can be agreed.

Policy should be directed towards making these perspectives pass into one another. It is the opinion of the Council that such dynamism has important strategic potential. Viewed in this light, the most important function of policy at national level is to explore the potential for environmental diplomacy at European level. Success at European level can in turn pave the way for breakthroughs at global level. Such environmental diplomacy should not only use persuasive instruments but also instruments belonging to the transaction domain.

The level at which policy is implemented does have a strong bearing on how instruments can best be deployed, but with concerted action the scale can be adjusted to suit environmental and economic requirements. At an international level, however, any further scaling up of environmental policy might meet with political opposition, thus rendering it less effective. *Active environmental diplomacy* can ensure that every environmental problem is tackled at the most appropriate level, avoiding or substantially reducing the risk of problems simply being transferred or the competitive position of industries and companies being undermined. Introducing a regulatory energy tax at European level would represent a major step towards introducing such a tax at global level, which is the ultimate aim. A start could be made with regional coordination. Dutch diplomacy could focus on arousing interest in the neighbouring countries for the introduction of taxes, initially on marginal consumption, with a tax-free allowance to enable continued control over the international transfer of economic activities.

Seen in this light, environmental policy is not simply a question of ends and means. The achievement of environmental objectives depends not only on the choice of instruments and the intensity with which they are deployed but also on the level at which policy is developed, so that patterns of production and consumption can be altered without impeding economic growth and threatening jobs. Environmental policy must therefore be dynamic, as this report's final message demonstrates.

Environmental policy as a learning process

For every instrument at every level there is in theory a maximum degree of effectiveness, but little is known about what this actually is. Hence, we must not base our reasoning solely on given objectives for protection of the environment. This would falsely suggest that the environmental space can be established once and for all. Instead, policy planning must be shaped as *a learning process* which shows on a regular basis what indeed *can* be achieved. In a policymaking process, only the ultimate goals should matter after having considered and reconsidered the tension between chosen objectives and instruments. The Council would therefore recommend that, in the preparation of future environmental policy plans, adoption of such an approach be considered, and that the relationships between objectives, timescales and instruments be reviewed from time to time.

Introduction

On 5 September 1990 the Dutch government asked the Netherlands Scientific Council for Government Policy to produce a report on the relationship between environment, economy and administration. Following the example of the report *Our Common Future* by the Brundtland Commission, the Dutch National Environmental Policy Plan (NEPP) discussed measures to tackle environmental problems in the framework of the development of a sustainable society. It was largely assumed that the traditional instruments available to the government would be adequate for this purpose. However, it is not certain that these instruments will enable the government to bring about, either by persuasion or coercion, the change in personal habits and commercial practice that would be required for the objectives to be achieved. The report would therefore first of all have to examine the types of instrument that could in principle be used. The government asked the Council to focus particularly on less commonplace instruments, such as measures based on market forces.

The Dutch government also wanted an in-depth study of the concept of 'sustainability'. The discussion of the concept in *Our Common Future* leaves room for interpretation. It would basically be a matter of defining which needs of the present and future generations must be safeguarded. Such a decision cannot be based on objective, measurable ecological data only; norms and values also play an important role. This question is to be examined at a later stage of the study and will be discussed in the next report.

The present report examines the first question. It was prepared by an internal project group of the Netherlands Scientific Council for Government Policy chaired by Professor R. Rabbinge, a Council member; the project secretary was Professor I.J. Schoonenboom, a senior member of the Council's staff. Others participating in het project group during the report's completion were Mrs Dr M.A. van Damme-van Weele, J.P.H. Donner, H. Hooykaas, Professor F.W. Rutten, Professor D.J. Wolfson, who are all Council members, and Mrs R.M. van Bruggen, Dr C.C. Koopmans, Ms Dr S.J. Langeweg, H.C. van Latesteijn, J.C.I. de Pree (Council staff members) and O.C.H. de Kuijer, who was on work placement. Many individuals and organisations were consulted during the compilation of the report. The Netherlands Scientific Council for Government Policy would like to thank them all for their assistance.

Background to the report 1

1.1 Introduction

In recent years a large number of environmental problems have become increasingly visible. In many countries and international fora policy is being formulated in order to tackle these problems. The environment now occupies an important place on the political agenda and environmental policy has developed rapidly.

In the Netherlands a series of policy documents have been produced in response to the current concern for the environment. The most important of these were the 1989 National Environmental Policy Plan (NEPP) and its follow-up, the National Environmental Policy Plan Plus (NEPP-plus) [1]. Section 1.2 takes a closer look at the NEPP and the targets it sets. Section 1.3 assesses the government's chances of achieving its environmental objectives in the short and long term. It is clear that, despite the fact that in a number of policy areas the state of the environment has improved considerably, radical changes in the behaviour of manufacturers and consumers will be necessary if these objectives are to be achieved. Section 1.4 therefore analyses the relationship between environmental problems and the socio-economic structure, thus setting the tone for the rest of the report.

1.2 The National Environmental Policy Plan

The NEPP accepted the Brundtland Commission's [2] call for sustainable development. Society is thus faced with two tasks: to repay the debts incurred in the past (cleaning up the environment) and to prevent future generations from facing environmental bankruptcy (sustainable development). But translating the concept of sustainable development into policy is no simple matter. It is a question of norms and values: what level of environmental quality do we wish to achieve and what degree of damage are we prepared to accept? Since not all environmental interrelationships are known, the NEPP attempts to indicate the conditions necessary for a level of environmental quality that keeps open as many options as possible for future generations. The NEPP thus defines the available 'environmental space', the extent to which the environment can be exploited without causing permanent damage by setting a number of targets. Because ideas on quality objectives and acceptable damage can differ, the concept of sustainable development can also be interpreted in other ways. This theme will be explored in a forthcoming Netherlands Scientific Council for

[1] National Environmental Policy Plan, Lower House 1988/1989, 21 137, nos. 1 and 2; National Environmental Policy Plan Plus, Lower House 1989/1990, 21 137, no. 20.

[2] World Commission on Environment and Development, Our Common Future; Oxford, Oxford University Press, 1987.

Government Policy report. The present report accepts the interpretation of sustainable development as used in the NEPP.

The environmental quality objectives in the NEPP - and other Dutch government policy documents - are based on an analysis of the state of the environment carried out by the National Institute of Public Health and Environmental Protection (RIVM) [3]. This analysis clearly shows that the environmental problems described in the NEPP are of a different order of magnitude than those faced by previous generations. Whereas environmental problems were initially felt mainly at local and regional level (noise pollution, odour, waste, local air and water pollution), today's environmental problems are also fluvial (eutrophication, dispersal of hazardous substances), continental (acidification, dispersal of hazardous substances) and global (climate change in response to the greenhouse effect and depletion of the ozone layer, wastage of natural resources). The NEPP indicates objectives for the period to 2010, but sets out specific plans until 1994. Table 1.1 quantifies the objectives given in the NEPP.

Table 1.1 NEPP environmental objectives for the year 2000

	unit	base year 1985	NEPP target 2000
Emissions to air of:			
CO_2	billion kg	162	175
NH_3	billion kg	253	82
NO_x	billion kg	552	238-243
SO_2	billion kg	271	75-90
VOC	billion kg	507	196
heavy metals[a]	index	100	40
Acidifying deposits	mol H^+/ha	6200	<2400
Burden on surface waters[b]	index	100	25
P accumulation in agric. land	million kg		0
N burden on agric. land	million kg		140
Waste[c]	billion kg	21	12
Use of CFCs	index	100	0
Energy consumption[d]	PJ	2504	2680

a Cadmium, lead, zinc and arsenic
b Phosphorus, nitrogen, cadmium, lead and zinc; excludes burden from abroad.
c Incineration, landfill and discharges combined.
d Corrected for temperature

Source: National Institute of Public Health and Environmental Protection, National environment outlook

[3] National Institute of Public Health and Environmental Protection, Concern for tomorrow; Alphen aan den Rijn, Samsom H.D. Tjeenk Willink, 1988.

In its attempt to achieve these objectives, Dutch government mainly uses direct regulation. In line with tradition, most measures focus on reducing emissions, thus discounting possibilities of bringing about structural changes in patterns of production and consumption. Even in preventive policy, which seeks to avoid the transfer of environmental problems through a system of integrated life cycle management, energy extensification and quality improvement, direct regulation is the government's preferred method of influencing behaviour. However, it is doubtful whether direct regulation is capable of bringing about the change needed in the behaviour of manufacturers and consumers. The following section examines this question on the basis of actual developments in the state of the environment in the Netherlands, as set out in the environmental policy evaluation by the RIVM [4].

1.3 Actual developments

The environmental policy evaluation by the RIVM examines how the state of the environment in the Netherlands is developing, thus reflecting the extent to which the objectives of the NEPP will be achieved. For more detailed information, the reader is referred to this report. Here, a brief evaluation is presented of the state of the environment so as to examine the effectiveness of the regulations employed under the NEPP.

The RIVM evaluation of the NEPP policy shows that a clear improvement is to be expected in a number of environmental policy areas. However, in most cases there is still a long way to go. It should also be pointed out that the expectations are partly based on a large number of - often rather optimistic - assumptions as to the implementation and effects of measures and autonomous social change. The prospects for a number of other environmental problems are less positive. Table 1.2 presents the intermediate results.

One policy which has been successful is that on halogenated CFCs. Consumption of CFCs in the Netherlands fell from over 13 thousand tonnes in 1986 to some 9.3 thousand tonnes in 1990. The aims of the covenant on the restriction of the use of CFCs in spray cans were achieved in 1989. Other environmental policy objectives have been realised to a lesser extent or not at all. This may be for a number of reasons.

[4] National Institute of Public Health and Environmental Protection, National environment outlook; Alphen aan den Rijn, Samson H.D. Tjeenk Willink, 1991.

Table 1.2 Expected developments in the state of the environment in the Netherlands

	unit	achieved 1985	1989	NEPP target 2000	expected 2000	measures 2010
Emissions to air of:						
CO_2	bln kg	162	185	175	181	203
NH_3	bln kg	253	234	82	114	104
NO_x	bln kg	552	572	238-243	323	284
SO_2	bln kg	271	222	75-90	93	92
VOC	bln kg	507	477	196	219	210
heavy metals	index	100	80	40	41	43
Acidifying deposits	mol H^+/ha	6200	4800	<2400	2900	2700
Burden surf. waters	index	100	72	25	48	41
P accum. agric. land	mln kg		84	0	18	15
N burden agric. land	mln kg		527	140	333	294
Waste	bln kg	21	22	12	18	20
Use of CFCs	index		100	0	0	0
Energy consumption	PJ	2504	2758	2680	2777	3095

Source: National Institute of Public Health and Environmental Protection, National Environment outlook.

Firstly, the environment recovers only slowly. Due to long-term leaching of, for instance, persistent crop protection agents in the soil, the state of the environment does not improve as soon as deposition of these substances reduces. This 'lag effect' means that the air, soil, groundwater and aquatic sediments will not be significantly cleaner for another twenty years.

In other cases, measures have not yet come into force or problems have arisen with the introduction of new legislation. A case in point is the legislation on the manure problem. For many years, Dutch agricultural policy focused on increasing production, which as a result has tripled since 1950. The large-scale use (one might say overuse) of fertilisers and livestock feed which brought about this rise in production has imposed an enormous burden on the environment, causing acidification and eutrophication. It is unlikely that the eutrophication objectives in the Rhine and North Sea action plans will be achieved by 1995. Furthermore, the targets for emissions of ammonia - the main cause of acidification in the Netherlands - will not be reached. Reductions of 55 per cent (down to 114 thousand tonnes) are expected, as against a target of 70 per cent (to 82 thousand tonnes). For the eutrophication and acidification targets to be achieved, the policy on manure, which has produced few results to date, will have to be intensified. Ploughing in of manure has not had the expected effect, partly because the introduction of the legislation was delayed; a study into low-emission livestock housing has not led to any action; and the construction of manure processing plants has been delayed, partly because of European licensing procedures. Although some improvement has been achieved by

reducing the nitrogen content of animal feed, a lot more has to be done to curb emissions of nitrogen to the air and leaching to the soil and groundwater.

Another policy which has not yet been fully implemented is that on waste. This policy is aimed at prevention (10% by 2000) and recycling (66% by 2000) to reduce the volume of waste being incinerated or going to landfill. Industry (which produced 1.5 million tonnes of waste in 1985) and consumers (4.7 million tonnes of domestic waste were produced in 1985) are important target groups. A number of positive developments have occurred. Many separate waste collection schemes (e.g. for glass, kitchen and garden waste and batteries) have been launched and 61 per cent of waste should be recycled by 2000 under current policy. However, it will be difficult to achieve the objectives set for 2000, because measures with regard to waste prevention have not yet been taken. Although the first results should be visible by 1994, the achievement (a 2.7% reduction) will still lag behind the target for that year (5%). No more than a 7 per cent reduction is expected for the year 2000 (as opposed to a target of 10%). There is also a lack of facilities for waste disposal. There is too little incineration capacity, new processing facilities are coming on line too slowly and many landfill sites are almost full. These infrastructural shortcomings might in the long term negate any progress achieved with environmentally sound behaviour; people will be reluctant to change the way they behave if it is not seen to help. Despite all the public's and industry's efforts at self-restraint and environmentally friendly behaviour, the waste problem threatens to become intractable.

Furthermore, policy may be hampered by a lack of technological progress. For instance, the introduction of the three-way catalytic converter brought about a 10 per cent fall in emissions of NO_x from cars between 1988 and 1990, despite a sharp rise in the number of kilometres driven. However, technology will have to develop further if NO_x emissions from the road haulage sector are to be reduced by the 80 per cent required for it to reach its NO_x target. There will have to be a number of technical breakthroughs before this is feasible.

Although cleaner technologies are being developed in many fields, they are taking a long time to penetrate the market. The replacement of plants with a long lifetime is proceeding more slowly than expected, meaning that a good deal of old - and thus more polluting - equipment, vehicles and livestock housing is still in use. In addition, the emphasis in technology should be shifted from 'end-of-pipe' measures to cleaner process technologies.

The effects of cleanup measures are often negated by the growth in population, road traffic and industrial production. Environmental burden is closely linked to the scale and nature of production and consumption, and the associated demand for energy, transport and packaging, for instance. The number of kilometres driven by *road hauliers* rose by 4 per cent between 1980 and 1986 and a further 18 per cent between 1986 and 1990. This trend is set to continue: the expected growth in production will cause

the number of tonne kilometres driven in the Netherlands to double between 1985 and 2010.

Car use has also increased. Between 1986 and 1989 the number of kilometres driven rose by 4 per cent a year. It is therefore very debatable whether, if the government sticks to its current policy, it will succeed in staying within the permitted growth limit of 35 per cent up to 2010. After all, the growth between 1986 and 1990 used up more than a third of the growth permitted for the period 1986-2010. The RIVM points out that the policy objectives regarding car use are not unfeasible but they are under threat. The plans - which will result in a sharp rise in the variable costs of running a car - must be adhered to strictly and consistently and implementation must go according to plan. However, the Central Bureau of Statistics has revised its prognosis of population growth upwards, which means that the number of kilometres driven by car will increase more than the RIVM assumes.

Naturally, an increase in the number of kilometres driven also has a bearing on fuel consumption. Between 1986 and 1990 the energy consumed by the road traffic sector increased by 11 per cent, from 297 PJ to 330 PJ. A further rise of 7.5 per cent is expected by the year 2000, while the NEPP target is a 17 per cent reduction. Only by bringing about a dramatic change in car use and introducing new technologies will fuel consumption in this sector - and therefore also emissions of CO_2, NO_x and VOC - be reduced. It will in fact prove difficult to achieve all the objectives of the energy conservation policy (and therefore of CO_2 reduction). Given the public's increasing environmental awareness and technological progress, the RIVM believes it should be possible to more or less stabilise energy consumption by 2000. However, it bases its calculations on optimistic assumptions about the effect of current energy policy (covenants on conservation, technical standards, subsidies, and public education campaigns). Recent figures produced by the Central Planning Bureau suggest that energy consumption will not stabilise by 2000, but will grow by 0.9 per cent a year. This translates into a 10 per cent increase on the 1989 level by the year 2000, 11 per cent over the NEPP target. The study found the measures taken to be too ineffective to achieve this target.

This evaluation of actual developments suggests that the major problems in the environment and in environmental policy are the result of faster than expected growth in energy consumption, car use, agriculture and waste streams. The main reason for this lies in the fact that the environmental impact of these social developments dominates the improvements which result from conscious policy. Despite considerable efforts, the long-term objectives will not be reached to such an extent that sustainable development is achieved. Extra effort will be required to change the behaviour of manufacturers and consumers in such a way that the targets for the year 2000 can be achieved. It is not certain that government, with its tried and trusted arsenal of legal and administrative tools, will be in a position to bring about this change, either by persuasion or coercion. It is for this reason that the government asked the Council to look at the relationships between environment, economy and administration.

1.4 Analysis of environmental problems

The administrative tradition of the 1960s and 70s was characterised by direct regulation, based on bans, regulations and licenses. At that time it was believed that government could transform society to conform to objectives agreed by politicians. However, such a system is heavily reliant on the availability of information and entails a great deal of enforcement, as a result of which government is now overloaded with tasks and responsibilities. What is more, environmental policy is constantly expanding, in terms of content and area. This, together with the recognition of the fact that the ecological and economic impacts transcend national boundaries, means that environmental policy faces unique administrative problems. The ever expanding political agenda has given rise to a need for a review of the situation, for a distinction to be drawn between necessary, unavoidable government responsibilities and functions which can best or even should be decentralised.

Traditional environmental policy instruments are not very well suited to cope with environmental problems: policy focuses too much on impacts. Society cannot be forced to change its behaviour by decree. The policy is unable to come to grips with the autonomous nature of growth and the source of disruption. The continuous growth in production and consumption has caused many environmental problems (cf. section 1.3). There is a constant drive to increase expendable income. More and more people are aspiring to financial self-sufficiency. Youngsters are leaving home earlier, people are having children later, new types of relationship have become common, there are more divorces: these developments have all led to an increase in the number of households. This 'individualisation' of consumption also occurs within households, with everyone wanting their own TV, car, etc. This process, which has partly been made possible by economic growth, has achieved a momentum of its own, and is reflected, for example, in a greater need for mobility. Experience shows that, unless measures are taken to influence people's behaviour, consumption will take on an increasingly environmentally unfriendly character, particularly as concerns car use and waste. If the targets in the NEPP are to be achieved, far-reaching intervention in the behaviour patterns of manufacturers and consumers will be necessary. This must be the main aim of environmental policy.

Viewed in this light, environmental problems can be regarded as a socio-economic issue. The behavioural changes required to achieve the objectives of environmental policy can be brought about in three ways: *coercion* in the form of bans and obligations (direct regulation); *exchange*, whereby transactions are made subject to financial sanctions (private law and financial regulations); and *information, consultation and persuasion* (social regulation). With this last type of regulation, the result depends on how those involved respond to social pressure.

To date, government has sought to tackle environmental problems mainly by means of coercion (direct regulation), with all the problems this entails. If we are to achieve sustainable development we will have to restrict our

use of the environment. This idea must be built into the social structure and order. The conflict between the scarcity of environmental resources and our use of them must therefore be made clear. However, the available environmental space still has to be defined in many cases: which of those elements of the environment which are not reflected in market prices can be exploited without jeopardising the aim of sustainability? The environmental issue can therefore also be regarded as a classic failure of market forces. All the elements of such a failure are present, if only because not enough information is available about the scarcity of resources. It is the task of government to define the environmental space available to us. Only then will social actors be able to take the environment into account when making choices. Environmental policy must ensure that this happens. This means that it must concentrate on reducing the burden of enforcement which falls upon government by internalising environmental values in the market mechanism. The question is therefore one of establishing how public administration can best exploit the potential of different instruments to make environmental problems manageable to the extent that they are reflected in the behaviour of individuals and organisations.

This report therefore examines the instruments available and how the best choice of instrument can be made. Chapter 2 briefly discusses the potential of the different types of instrument. To focus attention on this aspect, the actions of actors who influence behaviour are assumed to be objective and rational: given complete insight and an efficient choice of instruments government should redraw the boundaries of environmentally acceptable behaviour. Individuals and companies are assumed to react in a subjective and rational manner. In chapter 3 the Council sets out a rough classification which should assist in the selection of instruments. The characteristics of the situation determine the choice of instrument, as does the extent to which the choice meets the more general criteria of good management (effectiveness, efficiency and legitimacy). Finally, in chapter 4 the Council considers strategic aspects of environmental policy. Success depends on a well-targeted policy and implementation at the most appropriate level. It is also recognised in this chapter that governments too can act subjectively.

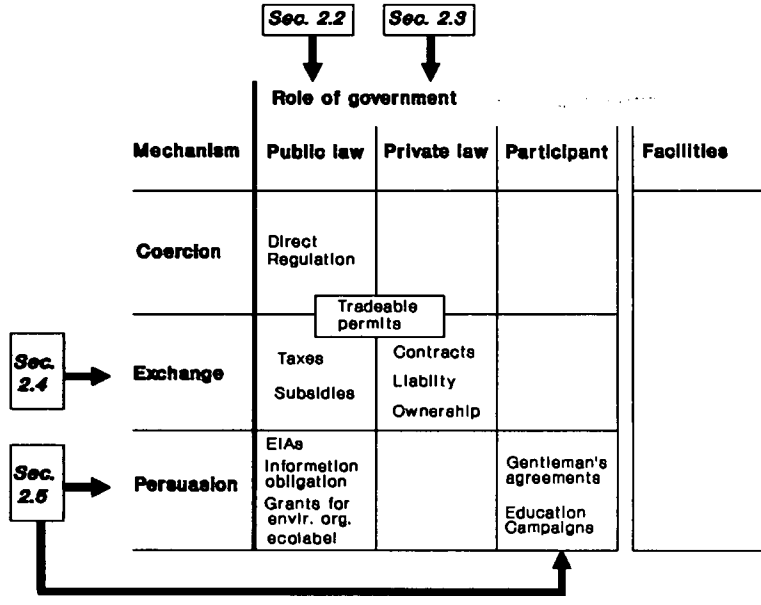
Instruments of environmental policy 2

2.1 Introduction

As indicated in chapter 1, environmental problems are caused by the actions of individuals and organisations. Government attempts to influence behaviour through its environmental policy. This chapter takes a closer look at the *instruments* which government has at its disposal for this purpose.

To allow the limits and opportunities of *government as an actor* in environmental policy to be evaluated, in figure 2.1 the regulatory mechanisms discussed in section 1.4 are set against three types of action by which government can control social interaction: regulations governed by public law, regulations governed by private law and types of action in which government simply acts as another participant. These categories represent a decreasing degree of involvement on the part of government.

Figure 2.1 Influencing behaviour and the different roles of the government



This double method of categorisation can be used to distinguish between input (government action) and output (social interactive mechanisms). The three columns of the matrix show how measures to influence behaviour can be divided according to the role played by the government. The rows give an indication of the type of social interaction which occurs as a result of a government's actions or which is used as a springboard for action. It shows

that instruments can be deployed in response to several types of existing interaction. Tradeable emission permits, for instance, are found not only in two rows but also in two columns, since restrictions on total emissions can be enforced using public law (when the government determines how many licences will be issued), while trade in permits is subject to private law. The target group is therefore coerced into not exceeding the permitted limits and offered the opportunity of trading in permits.

Outside the matrix are the public infrastructural and complementary facilities. These are the complements to the other instruments mentioned in figure 2.1, with which government attempts to persuade private individuals to change their behaviour. These general infrastructural facilities will be examined in this chapter only in the discussion of the individual instruments.

Figure 2.1 shows that it is almost impossible to impose a strict system of classification. Actual policy will generally use a combination of instruments. Speed limits, for instance, are enforced by the police, but their work is also supported by a system of financial penalties and public education campaigns. The instruments themselves might be hybrids, as in the case of permits (direct regulation) which are tradeable (financial regulation) or unofficial schemes initiated by the public which government tolerates (like the trade in petrol coupons in 1974).

A certain amount of overlap between different types of government action and social interactive mechanisms is therefore unavoidable. In view of this, the instruments of environmental policy are examined in this chapter from as many points of view as possible. This means that some instruments are examined twice: firstly from the point of view of government and secondly as a form of social interaction. To avoid confusion, the main points of each instrument will be examined only once.

Sections 2.2 to 2.5 are devoted to the public law, private law, financial and social instruments which can be used in national policy. However, deployment of these instruments is restricted under EC law in some cases. This fact is discussed in section 2.6. Finally, section 2.7 attempts to place the different types of instrument in perspective.

2.2 Public law instruments

2.2.1 Introduction

To date, public law instruments have been the preferred means of achieving environmental objectives, with those instruments which aim to alter behaviour by coercion, i.e. direct regulation, occupying a prominent place. However, instruments which are in principle based on other mechanisms are often founded in public law. This applies, for instance, to charges which do not seek to regulate environmental practices directly but to influence it by putting a price tag on it; people are still free to choose how to behave, and this mechanism can be regarded as a form of 'transaction'. Public law instruments which seek to alter environmental practices in this way will be

discussed where appropriate in sections 2.3, 2.4 and 2.5. This section focuses on direct regulation.

2.2.2 Direct regulation

The preference for direct regulation is due to the theoretically high degree of precision and effectiveness possible with this type of instrument. The legislature prescribes a certain form of behaviour, while government is responsible for monitoring compliance and enforcement. However, section 1.4 drew attention to the problems which a policy resting on direct regulation can entail: a great deal of information must be available and the burden of enforcement is great. Despite a number of changes in the law and the decision-making process which aimed to increase the effectiveness and efficiency of environmental policy, these problems cannot be eliminated entirely, since they are inherent in direct regulation.

Governments will always have to translate large scale problems into imperative regulation concerning individual behaviour. For this to work, polluters must be identified and technological possibilities known. Adequate monitoring of compliance with the regulations and the imposition of sanctions in the case of non-compliance are also necessary. Administration costs are inevitably high, while at the same time there is a complete lack of natural incentives for people to adopt more sound environmental practices. The more precise the control is intended to be, the higher the adminstration costs will be and the bigger the burden of enforcement. This can negate the theoretically greater effectiveness of this instrument and undermine the normative aspect of the regulations. However, if one responds to these problems by attempting to control the situation less precisely and enforce more general regulations, direct regulation immediately loses its advantage over financial instruments. Direct regulation should therefore be used with more restraint without undermining the effectiveness of policy. However, the more essential the change in behaviour - because, for instance, there is an enormous risk, or a need for urgent action, or a particularly bad case of pollution, etc. - the more reason there will be to exploit the potential effectiveness of direct regulation.

Such selectiveness in the deployment of direct regulation is necessary not only because of the excessive burden on the government which results in an inadequate implementation and enforcement. Our increasing insight into the effects of human activities on the environment shows that environmental policy will encompass increasing numbers of activities in the future. To attempt to restrict all these activities using regulations governed by public law would eventually undermine one of the principles of our current social order - freedom to act as long as it is not forbidden - and would in fact reverse the principle, imposing a ban on all actions unless they have received government approval. Whatever interpretation of sustainable development one subscribes to, the idea that our use of the environment must be restricted is inherent. *Such restriction must therefore be built into the social structure and order wherever possible.* The following sections examine how this can be brought about using other types of instrument.

2.3 Private law instruments

2.3.1 General

Private law provides a framework within which private individuals can formalise mutual arrangements and represent their own interests as they see fit. The key concept in private law is the recognition that in an ordered society individuals have certain rights and obligations towards each other which must not only be governed by an ethical code, but must also be enforceable in law. It is up to those involved whether they take steps to ensure that others fulfil their obligations.

2.3.2 Relationship between public and private law

Over the past few years government has made more use of the opportunities offered by private law instruments to achieve the objectives of environmental policy using private law instruments. It has instituted proceedings against polluters under private law more frequently in order to recover the costs of remedial work or to put an end to pollution, while attempting to reduce emissions by concluding agreements with companies and trade associations. However, it has made no or only limited use of the option of *adapting* private law in order to tackle environmental problems, despite the undeniable link between the current system of private law and these problems.

Many environmental problems can be traced back to a given division of rights and obligations among private individuals and between the public and private sectors. This division will often have been made in the general interest since in many cases it is of fundamental importance to the prosperity and fabric of society. For instance, no factories would be built if companies had to ask the permission of all landowners over whose land its emissions would pass.

Sustainable development nevertheless demands that restrictions on the use of the environment be built wherever possible into the social structure and order. There is therefore every reason to examine the extent to which the environment can be incorporated into the legal relationships between individuals. One crucial point is that if behaviour is to be changed on environmental grounds, it is assumed that there are third parties who have an interest in such change. Whether the desired changes can be effected also depends on the willingness of those third parties to claim their legal rights. However, private law does not lend itself to detailed technical regulations. The instrument is also less suitable as a means of tackling environmental problems which must be resolved as a matter of urgency.

The recognition that the carrying capacity of the environment imposes constraints on the extent to which we can exploit it for production and consumption implies that it is a scarce commodity in economic terms. Many factors are involved in the definition of carrying capacity and it is therefore a task for politicians. However, management of this scarce commodity and its distribution among the various interests in society must also be as effective as possible. Political considerations, the legislative and administrative process and procedures, as well as the rules and guarantees

of legal protection by which government is bound in all its actions make it less suitable for this purpose. It is in bringing about effective use and distribution of environmental resources that private law can play an important role.

2.3.3 Private law and the environment: general points

The legislature has two important openings through which it can regulate the system of private law: the specification of rights of ownership and the regulation of liability for acts which damage the environment.

Property rights

In many respects current environmental problems and the failure to control them are the result of the social order imposed by private law. Definition and control of a thing do not exist only in their own right. The controllability of the human environment is defined partly by rights and claims which are recognised in jurisprudence and legislation, subject also to technological and social developments. One example is copyright. However, in cases where it is not physically or legally possible for individuals to exercise control over a thing, it becomes a collective good (e.g. seafish) for which government in principle bears responsibility. The legislature can also restrict private claims to collective goods by not recognising them in law; restricting claims to mineral resources makes them into a collective good which the government can exploit through a system of concessions or otherwise.

Regarding goods as collective often indirectly causes environmental problems. The goods concerned are generally freely accessible and they can usually be used free of charge, unless government restricts this use under public law. Withdrawing goods from the private sphere gives rise to a public responsibility for their management. However, there are generally fewer options open to government for managing such goods than there are to private organisations; government and private actions are subject to different norms. The private individual or organisation can operate selectively, within certain limits, whereas government cannot. What it allows one, it has to allow others too, unless there are obvious reasons for not doing so. In the case of a privately owned beach, for instance, the quality of the beach is determined by the price users have to pay. However, if the beach is freely accessible to all, its quality will depend on cleaning by the municipality and the siting of waste bins (social regulation), orders and regulations (a ban on dogs or an obligation to keep them on a leash, a ban on certain types of recreation). Private operators may therefore be more effective from the point of view of enforcement and environmental protection.

Liability

In cases where damaging the environment also damages interests which are recognised under private law, private individuals and organisations can try to put a stop to the damage by instituting proceedings. In this way, the polluter can be made to pay the costs of any remedial work. The main elements which are crucial to the functioning of this mechanism (the concepts of the law of tort, protected interests, causality, damage and an

interest in bringing an action) are undergoing rapid development in legislation and jurisprudence, particularly that connected with environmental issues. As far as environmental matters are concerned, the most important developments have been the shift from general liability to strict liability and the greater rights which authorities and environmental groups now have to institute proceedings.

The increased risk of liability has also benefited another means of regulating environmental matters under private law. Potential polluters can insure themselves against this risk, but will usually have to conclude a contract with the insurance company which stipulates that they will take preventive measures to minimise the risks.

The increased liability for the consequences of environmental damage has led to the costs of this and of preventive measures being reflected in production costs. This mechanism therefore serves mainly to limit risks, curb illegal discharges and repair damage inflicted in the past. Further possibilities are examined in section 2.3.5.

2.3.4 Complementary relationship between private and public law

Only in a limited number of cases will it be possible to resolve environmental problems purely by resorting to private law. The very nature of the problems means that the framework within which a solution must be found will often be governed by public law. It will be impossible to ensure that non-renewable resources are exploited in such a way that the needs of future generations are taken into account by means of property rights alone. Private interest in the continuity of exploitation might guarantee that it is spread throughout the life of the owner, and possibly that of his children and his children's children. However, future generations naturally have no say in today's economic and social policies and their interests can therefore only be represented collectively. The decision as to whether, and if so which, needs of how many future generations should be taken into account is almost by definition a collective decision which must be put into effect by means of regulations enforced under public law (e.g. through taxes or quotas).

The same applies to the constraints which the carrying capacity of the environment imposes on the exploitation of non-renewable resources. However, it is not always immediately and tangibly apparent when the limits have been reached. The limits only become obvious long after they have been exceeded, by which time the situation will often have become so serious that further exploitation is impossible for many years. As long as fossil fuels are still available and reserves may not be privately owned, government will have to determine the rate at which they may be consumed. This applies in all cases, except where the limits of the carrying capacity are immediately felt (as is the case with soil pollution) and the environmental space can in itself or in connection with other factors (as fertility is related to the soil) be divided into segments that can be individually controlled and therefore exploited.

Likewise, the management of risks requires a choice to be made in public law between risks which can be adequately managed because certain parties can be held liable for any damage and risks which entail consequences which are so unacceptable that they must be avoided at all costs.

The fact that certain aspects of environmental problems have to be regulated under public law does not mean that they must be tackled entirely in this way. Having established that the available environmental space must be regulated under public law, it does not necessarily follow that use and management of that space also has to be regulated by this means. Government decisions on the distribution of scarce resources and a licensing system governed by public law will not guarantee optimum use of those resources, but will guarantee high administrative costs. The environmental policy pursued to date has failed to resolve this problem. The legal instruments currently available - as discussed in section 2.2 - offer no or only limited opportunity for adequately translating environmental plans and objectives into specific requirements for individual economic activities. The issue of distribution can be better addressed within a system that uses public law as a complement to private law. This idea is discussed further in section 2.3.5.

The roles played by regulations under public and private law in tackling environmental problems are not, therefore, parallel but *complementary*. This fact is beginning to be reflected in private law: the norms of public law are taken into account when establishing whether environmental damage is unlawful; protection of the environment is recognised as being not only in the public interest but also in the common interest of the private organisations and individuals concerned; government is no longer regarded as solely responsible for repairing environmental damage. The increasing use of government powers to achieve public objectives through the system of private law is another reflection of this development.

2.3.5 Options and restrictions

This section will examine more specific options available under private law for the implementation of environmental policy. The main aim here is to reduce the public law responsibilities of the government. As will become clear below, this sometimes requires new legal concepts.

2.3.5.1 Use of current options available under private law

Tradeable permits

One instrument which is interesting from the point of view of distribution is the tradeable (transferable) permit or right to pollute, which introduces the concept of 'ownership' to pollution. The economic aspects of this instrument are discussed in section 2.4. In the Netherlands this concept arises mainly in the agricultural sector (fisheries licences, fishing quotas for plaice and sole, manure spreading rights, milk quotas) and is also used in the road haulage sector. However, this instrument is rarely, if ever, used in environmental legislation. The United States have more experience of the use of this instrument in the environmental field. The recent amendment to the US Clean Air Act allows the federal government to use it as a means of distributing the capacity available for the emission of substances to the air.

In essence, a system of tradeable permits means that the total unused carrying capacity for environmental pollution resulting from the use of a certain substance or a certain activity, in terms of both time and space, is determined on a collective basis. It is then divided into individual shares which are issued to polluters in the form of permits. These permits, which may or may not be free of charge, can then be traded among the polluters. A system like this therefore involves complementary use of public and private law.

It should be stressed that a system of tradeable permits or emission rights can only offer a solution to the problem of distribution, which is inherent in environmental policy. The problem of enforcement remains (witness the problem of enforcing fishing quotas). Government will still have to ensure that no one operates without a licence and that the burden actually imposed on the environment does not exceed the limits.

One variation on this instrument is the *tradeable reduction*, whereby a company whose emissions remain below the permitted limit because it has taken extra measures can sell the difference to another company. The advantage of such a system is that even under a licensing system there is an incentive to use the space available in the best possible manner. Since such a system would probably entail a great deal of administration and high costs, the tradeable reduction system could not be used on a permanent basis. However, it might well be suitable as a means of easing the transition from the current licensing system to a system of tradeable permits.

Management of environmental resources under private law
Closely related to the tradeable permit is the idea of setting up a management system for environmental resources under private law. This enables more efficient exploitation of the economic value of scarce resources. Use of a particular natural resource in one place can, for instance, be compensated for by expanding or restoring that resource elsewhere. A legal entity set up specially for this purpose would be paid for its services. The method applied here is the same as that used for tradeable permits, with the added advantage that the legal entity has an interest in ensuring that obligations are met.

By extension, this system can also be applied to the management of collective goods such as the quality of water in a river. The sale of emission rights could be transferred to a separate legal entity which would be obliged to ensure that the quality of the water remained at a certain level and, if the water quality were to rise above a certain pollution level, to auction off emission rights. The water quality requirements would prevent fish from dying of pollution while the obligation to sell extra permits would protect the economic interests of communities situated along the river. Agreements establishing the right to discharge to the river could be used to check that the limits are not being exceeded. The management body would also be able to increase the capacity for discharging by building water purification plants, while the government could buy up emission rights in order to improve overall water quality or build up a reserve which could be used to attract new companies to the area. The use of such a system would not

relieve the government of all its responsibilities regarding the management of water quality; it would still need to monitor the way in which the legal entity concerned carried out its tasks and maintained the required water quality, and it would also have to take steps against illegal discharges. To prevent a monopoly being created, responsibility for management of different parts of a river or its tributaries could be given to different legal entities which would have to obtain emission rights for the pollution which they cause downstream.

Such a system would certainly be suitable for the management of natural resources within the national legal order, although it allows for the alternative of an independent or privatised management body. The system is particularly appropriate for the management of international environmental resources in the case of transboundary air pollution, particularly within the European Community. If the legal and administrative infrastructure of the Community fails to develop sufficiently to cope with a system of transferable permits at European level, private law can be used in this way to allow the burden imposed on the environment in one member state to be traded off against restrictions in another. This would offer a solution to the problem of a member state, such as the Netherlands, having to make huge investments in marginally improving air quality, while it is in fact determined by pollutants being carried over from the East, where it should be possible to substantially reduce emissions at source.

Interested parties

The nature of environmental problems implies that damage to the environment cannot generally be identified with damage to private property rights. Although environmental damage will generally affect the interests of large groups of individuals, it will not affect any individual so badly that he or she would have grounds for legal action. However, environmental degradation is being regarded by growing numbers of people as a weighty, almost personal interest or as an indirect threat, quite apart from any effect it might have on property rights. This public concern has also prompted the creation of legal entities governed by private law which represent the *public interest* in environmental matters (e.g. Greenpeace, *Stichting Natuur en Milieu*). It has been recognised in jurisprudence for some time now that such interest groups can, under certain conditions, represent their particular constituency at law. The scope for this has been gradually increased. In one case, the Dutch Supreme Court sustained the claim of an environmental group which represents environmental interests in general. The Dutch government has recently proposed legislation allowing interest groups to act in court. One fundamental question concerns the extent to which interest groups should be allowed to act in the *public interest*, separate from specific individual interests. This question follows naturally from that of whether, generally speaking, a 'concerned' individual should be able to act in the public interest, demanding compliance with licensing regulations, for instance. This concept (public action) exists in other legal systems. This is the flipside of the question of whether the government may use private law and the code of civil procedures to represent the public interest alongside its powers under public law. Gradually, jurisprudence is creating more scope for this.

The answer to these questions will have important consequences for society. The pressure to comply with environmental norms and regulations set under public law will probably increase if not only government but also private organisations can enforce compliance through the courts. This could mean that companies will be confronted with many court cases. However, fear of such an escalation is inconsistent with actual practice. In countries where forms of public action have been introduced, the costs of law suits have acted as a deterrent. In cases where the monitoring role of the government is to be partially taken over by private organisations, it would seem sensible to reduce this deterrent. Private actions will have more chance of success if environmental practice is regulated under public law. Then, organisations will only have to demonstrate that the regulations have been violated to prove that an illegal act has been committed. One interesting consequence would be that, faced with competition, the government would be likely to intensify its own monitoring activities.

Covenants

Increasing use is being made of voluntary agreements, or covenants, concluded between two or more actors, who might all be from the public sector (administrative covenants), or from the private sector (social covenants) or a mixture of both (policy covenants). Policy covenants are currently the main focus of attention in environmental policy.

Nevertheless, the legal status of these agreements is still unclear. Where a covenant is an agreement between parties which is intended to be binding upon those parties, it is in principle a binding contract under private law. The position of such agreements within the set of policy instruments available to the government, and the question of whether they are intended as binding agreements, is still uncertain.

In essence, what we have here is a clash of two cultures: one based on the unilateral exercise of public authority, whose watchwords are democratic control, protection of the interests of third parties and legal protection, and the other based on negotiation and the 'pacta sunt servanda' principle. Government, as a public authority, enters into agreements with private organisations and is therefore subject to the restrictions of private law. Current legislation offers no guarantees that all licensing authorities will actually comply with an agreement, and that the public participation, legal protection and application of the principles of sound administration will not lead them to deviate from the agreement. This would require formal recognition of the concept of such agreements in law, making them a form of functional decentralisation to trade associations within the framework of a collective decision. It would probably be necessary to distinguish between establishing specific reduction targets, following the consultation procedures with all parties involved, and the implementation of those targets in a licensing system established under specific arrangements.

In this view, covenants are used only as instruments of implementation in areas which are already adequately covered by legislation and public regulations, and in which the government can exercise control by issuing licenses. However, the use of covenants, and the debate on the use of

covenants, are by no means limited to those areas. Agreements are also made concerning issues over which government has no regulatory authority at present. In such cases, the advantage of the covenant is that it enables measures to be taken quickly and directly involves the companies concerned. In this way, covenants act as a form of social regulation, a forum for consultation, enabling desires and objectives to be matched with willingness to act, and allowing good intentions to be formally laid down as criteria for social control (see also section 2.5).

The idea is also, however, that covenants be used as a more binding policy instrument, for example in the implementation of EC directives which specify implementation by means of voluntary agreements as an option (e.g. the directive on containers of liquids for human consumption; in other cases covenants do not offer an adequate guarantee of implementation). It should be pointed out that the legal character of many covenants is still fairly unclear. It is therefore also unclear whether they should be regarded as social regulation or regulations under private law. A civil court would in many cases have difficulty in coming to a decision if such an agreement were presented to it for assessment.

One important advantage of using covenants as binding instruments lies in the fact that the companies concerned are involved in and agree to the setting of standards and their implementation. Politicians would in principle be responsible only for setting environmental objectives for individual target groups, after consultation. Achievement of these objectives would then be a matter for the private sector. Such a division of responsibilities would be impossible under public law. Although the use of covenants is usually presented as a temporary solution in anticipation of new public legislation, they could in fact turn out to be more permanent, given the division of responsibilities they bring about, something which is virtually impossible to achieve by means of regulations which are by definition universal.

If covenants are to be enforced not by licensing and regulation but solely by virtue of their binding nature under private law, a number of questions need to be addressed: (1) Can environmental interests bear this kind of delegation, with the government relinquishing some of its authority and private parties having more policymaking freedom than under the traditional decentralisation/deconcentration model? (2) How will participants be protected against exploitation by outsiders? (3) Who would have the power to enforce sanctions?

The need to strike a balance between government's responsibility for formulating and implementing policy, monitoring and enforcing sanctions, and its inability to do all these things itself means that environmental legislation must set out clear frameworks, but leave the substance to those directly involved. The Council would therefore recommend that public legislation of this nature be introduced.

Quite apart from the legal questions (including some pertaining to Community legislation) surrounding policy agreements, one might also question whether, given the idea that the available environmental space

should be used in the most economic way, it would be appropriate for each sector to fill in the details of environmental objectives itself. This reintroduces the principle of sectoral responsibility for certain social objectives, and might reduce social and economic flexibility. It is doubtful whether this would benefit the competitive position of the Dutch economy in the long term. Leaving it up to the individual sectors to translate the objectives of environmental policy into action removes the possibility for exchange between sectors. In dividing environmental space between sectors, given the economic value of scarce environmental resources, government also defines the economic relationship between sectors. Perhaps the first round of divisions might be related to actual economic relationships and needs, but in later rounds, politics would increasingly come into play and economic realities would not be adequately reflected. This objection applies not only to covenants concluded with entire sectors but also to those agreed with individual companies.

Monitoring

The implementation and enforcement of environmental policy entail a good deal of monitoring. This is generally the responsibility of the government as far as public law is concerned. However, in view of the fact that the government is overburdened with responsibilities, privatisation of some monitoring activities might also be considered. In essence, polluters would be obliged to allow an independent expert to assess whether they are meeting certain requirements and obtain a certificate to that effect. Under such a system, monitoring would no longer be a question of government exercising its power but of an expert assessment of whether certain objective, technical regulations are being observed. This is naturally based on the assumption that a different system of public law would be introduced.

If monitoring is to be privatised, government will have to recognise and monitor the privatised inspectorates. The risks inherent in privatisation will largely be reduced and controlled by the individual professions, in the interests of their image. A professional association (of lawyers, accountants, etc.) set up under private law might be able to offer support.

The development of environmental inspection as a private service industry also serves a more general public interest. For sustainable development to be achieved, it is above all necessary that we are able to recognise and control the environmentally damaging impact of certain activities. However, this kind of information is also becoming more important to industry, given that environmental considerations are playing an ever greater role in consumer choice. Bad environmental practice can therefore lead to loss of profits, especially if companies have to pay the price of environmental damage. In this event, monitoring is also in the company's interest. Just as the annual account audit has become an essential part of good management practice, so an environmental audit should become part of every manager's list of priorities.

2.3.5.2 Adapting private law

In principle, environmentally damaging behaviour can be tackled from two angles under private law: by extending the rights and liabilities of specific individuals, so that damage to the environment also damages those rights, and by defining more specifically the general rules of social behaviour.

Extension of rights and liabilities

Extending specific rights and liabilities increases the costs of and potential liability for certain actions. Those costs and liabilities will remain manageable only if a limited number of individuals have those rights; if too many are empowered in this way, the economy would soon slow down. The aim of environmental policy is to allow social and economic development within environmental constraints, not to make economic growth impossible. Only in cases where a certain development must be stopped in the interests of the environment could the legislature deliberately make use of the economic effects of high transaction costs which arise when private individuals have rights and liabilities to certain natural resources.

General claims with regard to activities

Sustainable development might also be achieved by changing the basic rules of society and social interaction. One possibility would be to oblige individuals and organisations to publish information on the external environmental effects of their activities. Once these external effects are known, individuals and the government, in their capacity as private legal persons, can have recourse to the courts in the event of alleged damage to individual or collective interests. One spectacular example of this is the recent out-of-court settlement agreed between the municipality of Rotterdam and a number of chemical companies which discharge waste to the Rhine. What had for years been unachieved by way of public law could be settled within a short time by threatening with tort action through the courts. The crucial thing in this case was that it was known which companies were discharging what quantities of harmful substances. It had all the ingredients of a successful case: damage, interest in bringing an action, causality, culprits.

The obligation to provide information might consist of a duty to offer an insight into the possible environmental or public health *effects* of certain commercial activities (EIA, new chemical substances) or a duty to monitor the direct environmental *impact*. The former would entail enormous costs for society, which would probably be out of proportion with any benefit obtained. However, the demand that companies keep track of the how and to what extent their activities give rise to emissions or burden the environment in another way would not be unjustified, given the scale of current environmental problems.

A number of sectors (such as the chemical industry) are already working on this, under pressure from the environmental movement. However, not all sectors are subject to the same kind of pressure, although this could all change if the obligation were a legal one. In this context, private law would be more appropriate than public law as a framework for legislation. Companies could be made to compile regular written reports of the

environmental pollution they cause and issue the information on request. To check the accuracy of the information, judicial inquiries (the private law equivalent of the parliamentary inquiry) could be carried out. To take the system one step further, the information could be subjected to an annual audit by an internal or external expert (environmental auditor). Once recorded, the information would be binding on the company. If certain levels were exceeded, interested parties could go to court to obtain a ban on certain activities or the company could be made liable for the costs of any cleanup operation required. However, the company concerned would undertake only to provide information on its own pollution.

The Council believes that such an obligation to publish information could go a long way towards preventing unnecessary environmental damage. In addition, it would involve less enforcement work than the monitoring of standards subject to public law.

The system could be taken one step further by not leaving measures to curb unnecessary pollution to the companies themselves but linking them to *general standards*, as is currently the case in some pieces of environmental legislation. The ultimate aim is to ensure that unnecessary pollution is wiped out completely and that companies do not place a greater burden on the environment than strictly necessary.

One extreme measure is to recognise the *individual's right to a healthy living environment*. Damaging the environment would therefore infringe the rights of the 15 million inhabitants of the Netherlands. This could, theoretically, virtually entirely solve all environmental problems. However, it would place environmental policy entirely in the hands of the judiciary, since it would depend on the courts' interpretation of the term 'healthy living environment', which is, after all, a subjective thing which cannot be safeguarded by absolute rights and claims. Courts would in principle have to ban all air pollution as soon as limits had been exceeded but, when air quality thus improves, pollution would once again be allowed. This would encourage self-regulation, but at a high cost to society.

A less drastic possibility would be to introduce regulations under private law along the lines of the State of Michigan's Environmental Protection Act. Under the terms of this Act any natural or legal person can obtain a court order or declaratory judgment against any form of environmental pollution, unless the 'polluter' can show that he did not cause the pollution or that there is no reasonable alternative and that his behaviour is consistent with the promotion of public health, safety and welfare. The merit of such a system is that pollution is restricted to those cases where it is unavoidable, or at least where avoidance of pollution would lead to unacceptable economic consequences, or to those cases where there are socially acceptable grounds for burdening the environment.

This type of legislation can have a pronounced preventive effect, particularly in combination with the obligation to publish information, which was discussed above, and access to the courts for groups which represent the public interest. When recording the information, companies could be asked

to indicate what proportion of the pollution they cause is unavoidable and what could be reduced in the near future. This would help to promote self-regulation within industry. The law could state that, in order for its categorisation of pollution to be regarded as well-founded, the company must meet standards which have been set by its particular sector and approved by the government. The company would be free to choose its own methods but would have to demonstrate the reasons for assigning pollution to a particular category. The advantage of this type of self-regulation is not only that control will be exercised by interested parties but that the competition will also have an interest in ensuring that all companies in a sector have to meet the same requirements. This would lead to pressure to conform to the rules set by the sector, while individual companies would have the option of meeting the standards by other means. Such a system also allows the status of policy agreements with the government to be more clearly established.

One source of dispute might be the stage at which such general obligations should be introduced. At the current stage, where the existing unnecessary pollution must be curbed, the economic consequences could be considerable. However, this does not detract from the fact that these and other general regulations can be used to make sustainable development an integral part of society, with the monitoring of compliance carried out to a not insignificant extent by interest groups. The Council would therefore recommend that further research be carried out into the possibility of introducing such a system.

2.4 Transaction-based instruments

2.4.1 Economic aspects

The intentional use of fiscal and parafiscal incentives to control individual behaviour is something of an innovation in the world of taxation. Traditionally, the economic consequences of fiscal instruments have been assessed quite simply on the basis of *neutrality*. Under this philosophy, the parameters of choice in the economy should be affected as little as possible. When taxing expenditure, the social costs of the loss of prosperity caused by the effect on incomes have to be accepted, in the hope that the benefits of the measures to be financed will outweigh the costs. If taxes are not levied universally on all expenditure (as has been called for), but discriminate between different types of expenditure as a result of altering relative prices, the ensuing substitution effect leads to an *additional* loss of wealth (excess burden) as a result of restricted choices. Traditional tax theory combines the idea that any such additional loss of prosperity should be kept to a minimum with that of tax experts that the legitimacy of taxation is served by the apparently simple legal principle of 'neutrality'.

In practice, however, virtually all taxes and transfers of income affect behaviour, and therefore unavoidably give rise to substitution effects, as well as affecting incomes. This applies not only to consumer taxes but also to income and capital taxes, which cause substitution effects in the supply of the factors of production. Traditional fiscal theory calls for behavioural responses to be 'equalized' by a system of taxation in which taxes on income

and consumer taxes are set at such a level that supply and demand for all goods and factors of production are reduced in equal proportions.

Even this perspective on the concept of neutrality is not adequate, in so far as it reflects a desire to remain as close as possible to the allocation prior to fiscal intervention, because a *change* in allocation might in fact be the aim of intervention. Musgrave puts the principle of neutrality in perspective by remarking that 'neutrality is efficient only in the avoidance of effects that are not an intended part of an efficiently determined set of policy objectives' [5]. If there are allocative distortions to start with, Break's observation that 'a distorted world [...] can be improved by adding distortions of the right kind' [6] applies. This fundamental insight is the main reason for using financial instruments in environmental policy. Taxes and subsidies can help to *improve* allocation, by internalising negative and positive external effects. Substitution effects are now *desired* effects in the sense that Musgrave and Break meant them. They do not lead to an additional loss of prosperity but to an *increase* in prosperity, because the allocation process is then based on the price/quality ratio, which reflects the *actual* alternative costs. These actual costs take account of and internalise environmental values. Tax experts now recognise that the traditional idea of neutrality as a principle of taxation is based on the inaccurate assumption that the allocation which is affected is efficient. In the modern theory of public finance, controlling allocation is regarded as a legitimate aim; the objective is no longer to tax in a neutral way but to tax what is not wanted (environmental degradation) and spare what we do want (income).

'Earmarked charges', regulatory charges and environmental taxes

Government has a number of options when it comes to taking financial measures to deal with environmental problems. It can choose between earmarked charges, regulatory charges and environmental taxes, which differ in terms of their *primary objective*. *Earmarked charges* are a more or less individualised quid pro quo used to finance certain environmental projects, with the rate dependent on the funding needed. *Regulatory charges*, on the other hand, primarily aim to curb undesirable practices, irrespective of any funding which might be required for countermeasures. They aim at substituting environmentally sound production processes, products and patterns of consumption for bad ones, which means that the basis for the charge may gradually diminish, or even may disappear. They are distinct from target charges because their regulatory aim implies that they may not be controlled by a need for funding. The primacy of this regulatory aim can best be guaranteed by not using the income these charges generate for a specific aim or for filling the public purse, so as to ensure that the government's spending requirements do not influence the rate. The revenue from the tax can therefore best be returned to households and/or companies. *Environmental taxes* combine funding (through an

5] R.A. Musgrave, The Theory of Public Finance; New York, McGraw Hill, 1959, p. 141.

6] G.F. Break, 'The Incidence and Economic Effects of Taxation'; in: The Economics of Public Finance; by A.S. Blinder et al. (eds), Washington, Brookings, 1974, p. 224.

uncompensated effect on incomes) and regulation (through the substitution effect) by introducing environmental considerations into the tax system, which would then take environmental value as its basis rather than the traditional system of taxing income, capital or expenditure. Since, however, the primary aim is to obtain funding, this also determines the rate, with regulation relegated to a side effect, albeit a desirable one. While regulatory charges should preferably be imposed on things for which there is relatively elastic demand, environmental taxes, in contrast, would be levied on environmental resources for which demand is fairly constant, in order to prevent the overall tax base from being eroded.

As can be seen from Figure 2.2, this report makes two distinctions:
(1) between *earmarked charges*, which are intended to provide enough earmarked funds for government to fund specific environmental measures, and *regulatory* charges and environmental taxes, which focus either partially or entirely on influencing behaviour; and
(2) between regulatory *charges* and *environmental taxes*, the former of which have the primary or secondary aim of provoking 'tax-evading behavioural changes', while the latter seek to alter the tax system permanently.

Figure 2.2 Fiscal instruments

	Aim	Revenue spent on
Earmarked charge	Funding	Environmental measures
Regulatory charge	Behavioural change	Feedback into economy
Environmental tax	Reform of tax system	Substitution for other taxes

Categorising fiscal instruments into earmarked charges, regulatory environmental charges and environmental taxes links *expectations* of behavioural changes to principles which may or may not have their origins in environmental practice. Such an approach is not without risks, given the highly fragmentary feedback of information on how financial instruments actually work. Should it appear in hindsight that the responses are different to those expected, some reclassification might prove necessary. This has already happened in the Netherlands with the water pollution charge, which was intended as earmarked charge, but had a regulatory effect because it was based on negative values (quantity of and level of pollution in wastewater). The regulatory effect - which could have been foreseen - became clear when companies began to purify their own water, the revenue from the charge turned out lower than expected and the public water purification plants found themselves running with extra capacity.

Earmarking charges and unifying policy
Earmarked charges are in principle earmarked from the outset; they are intended for a predetermined purpose, on the premise that this will promote social acceptance of the sacrifices required to pay for policy. However, dividing public funds in this way often means that measures take on a life of their own and are excluded from national priority selection.

In a more general sense, earmarking revenue from environmental levies may hamper the coordination of parafiscal, fiscal and budgetary policy. The proliferation of fiscal and parafiscal policy, distributed among different ministries, can tempt the ministers involved to set rates on the basis of considerations other than the desired change in behaviour and to use the revenue in an inequitable manner. Furthermore, coordination of the feedback of the revenue into the economy by means of tax reductions can be seriously hampered if the fiscal and parafiscal system is fragmented.

The Council would therefore welcome a move from parafiscal to fiscal measures (universal environmentally-based consumer tax).

Aiming at optimisation

Regulatory environmental charges do not aim to eliminate pollution entirely (if this were the aim, a total ban would be a more obvious step) but to reduce it to a level which can be absorbed by the environment. When it comes to affecting choices, according to the theory of optimal allocation, the rate should in principle be equal to the costs to society of the pollution. The rate will depend on the level of pollution (the reduction objective) and the elasticity of demand for polluting production processes and products. If demand turns out to be elastic in the long run, a reduction in pollution can be achieved fairly rapidly and at relatively low cost, and the revenue from the regulatory charge will be low. If demand is inelastic, it is worth considering converting the charge into an environmental tax which forms part of the normal tax system, while at the same time reducing other taxes under the motto already mentioned above of 'tax what you don't want, spare (or reduce the tax on) what you do want'. When assessing the effects of environmental charges and taxes, one should also take into account any positive and negative secondary effects on the environment. For instance, a charge on parking in the city centre will cause companies with a high number of employees (who park for long periods) in relation to visitors (who generally park for a shorter time) to move away, while those with more visitors than employees are likely to be attracted to the area. This is a positive thing in terms of urban planning.

The relative advantage offered by the transaction mechanism over social regulation based on consultation and persuasion lies in the fact that actors are confronted with enforceable parameters of choice within which environmental values can be internalised as far as possible. Enforceability can be a problem with social regulation and efforts to internalise environmental values can get bogged in partial solutions and vague promises. However, financial regulation, in the form of a transaction initiated under public law, obliges government to introduce a price and to enforce that price. From this point of view, a solution founded in private law is preferable, with the parties involved setting the price and ensuring compliance. Another disadvantage of financial instruments is that information on the elasticity of supply and demand is often unavailable; they are also less flexible than social instruments.

Compared with direct regulation, financial instruments offer the advantage that they are in line with the allocative principle that 'prices should tell the

truth'. In contrast to a (progressive) system of physical standards, a well-structured system of charges allows the economic actor to adapt his production process or consumption habits in the long term at the lowest possible cost. Disadvantages include again the uncertainty about the elasticity of supply and demand, the difficulty of defining the environmental values which must be internalised and the ensuing uncertainty as to short-term effectiveness. One frequently heard objection is that charges also give rise to extra costs. This depends on one's point of view, both in the microeconomic comparison with direct regulation and in the macroeconomic effect on public spending.

Transfer of environmental costs

In a microeconomic sense charges and taxes naturally give rise to extra costs for individual manufacturers and consumers when compared to a situation in which the sustainability criterion is ignored. According to modern legal principles, the polluter should be made liable for any pollution which threatens sustainability. In the enforcement of any sustainability criterion by means of direct regulation, one must take into account not only the costs of enforcement but also the implicit costs arising from the loss of freedom of movement for the manufacturer or consumer. Together, these costs are much higher than the costs of any financial instrument, which allows freedom for adaptation and improvement. This ultimately leads to a reduction in costs.

From a macroeconomic point of view one should bear in mind the fact that, as far as society is concerned, environmental costs will have to be paid in one way or another. There is therefore no extra burden for society; on the contrary, if environmental charges and taxes are properly structured (on the basis of the marginal social costs of environmental pollution) they relieve our patterns of production and consumption of undesired side effects and the threat of future environmental bankruptcy. Objections to environmental taxes are therefore mainly confined to the redistribution of benefit and burden under the 'polluter pays' principle or to the undesired side effects of transferring environmental costs to other markets, particularly the job market.

Ideally, a combination of financial incentives to include negative external effects in decision-making and a well-considered compensatory reduction in tax could help in two ways to ensure that growth in production also results in an improved standard of living. If financial instruments to influence behaviour are introduced together with a reduction in income tax, two ways of improving social efficiency open up. Firstly, the difference between the cost of environmentally damaging production and consumption and the social costs this entails (including in terms of environmental degradation) is reduced. This sets in train adaptation processes which benefit the environment. Secondly, a reduction in income tax can have a positive effect on the use of resources. This is of course only the case in so far as workers are satisfied with the fiscal compensation offered for the effect on their spending power of higher environmental costs, preventing these higher costs from being transferred to the factor capital. Such a development is all the more likely if consumers alter their habits (the primary aim) and an

increasing labour supply enables environmental costs to be absorbed in employment conditions.

2.4.2 Types of transaction-based instruments

Regulatory charges and environmental taxes

In the economic literature, regulatory charges and environmental taxes are linked closely to the term 'external effects'. If an external effect occurs, the costs to the executive of an activity do not reflect the social costs. The scale on which the activity takes place might not therefore be in the best interests of society. These social costs of environmental policy are an important consideration for policymakers, because very large sums can be involved.

Baumol and Oates [7] conclude that an economic system without taxes or subsidies to compensate for external effects will lead to a non-optimal allocation. Although the 'ideal system' of taxes and levies is difficult to achieve if the external effects are serious, a system of environmental objectives combined with taxes and subsidies produces relatively efficient allocation. Taxes and subsidies, used to correct relative prices, can allow environmental objectives to be achieved at minimum cost (the 'least-cost-property').

Regulatory charges can be very effective in certain situations. Basically, the practice (or a quantity which shows a strong correlation with the practice) which is to be restricted must be taken as the basis for the tax and suitable alternatives must be available. Dutch environmental policy has rarely made use of regulatory levies to date.

In the current system of taxation in the Netherlands, only the excise duty on fuel can be regarded as an environmental tax. In general, environmental taxes cannot be expected to produce miracles when it comes to quick changes in environmental practices. Nevertheless, they can provide a permanent incentive to change patterns of consumption and develop new production processes.

Tradeable permits

The private legal aspects of tradeable permits were discussed in section 2.3. This section deals mainly with the economic characteristics (particularly the efficiency) of this instrument. Since the least-cost-property in charges also applies to tradeable permit systems, like regulatory charges this instrument is economically efficient.

The instrument is based on the creation of markets on which scarce environmental 'values' are traded. The volume and/or nature of permitted environmental effects are fixed beforehand. The price of a permit depends on supply and demand factors which are often unknown in advance. Tradeable permits are therefore most suitable in situations where the amount of available environmental space is a fixed variable. The main

[7] W.J. Baumol and W.E. Oates, The Theory of Environmental Policy; Cambridge, Cambridge University Press, 1988, p. 97 and chapter 11.

theoretical advantage of such a system is that it involves a fixed emission ceiling and allows reductions to be effected at the least cost. In terms of environmental effectiveness, a lot depends on the measurement of initial emissions and the reductions achieved. This is not simple.

Tradeable permits are often based on the 'bubble concept', whereby a certain area is enclosed in an imaginary bubble. The environmental quality objective or total emission limit within that bubble is established, and trade in permits is only possible within the bubble. The best size for a bubble depends on ecological factors and the type of permits issued. From an economic point of view (the cost of reducing emissions), the bigger the bubble the better; the bigger it is, the more opportunity there will be for cutting costs by trading permits. However, a very big bubble might ultimately have negative environmental effects.

Tradeable emission permits have almost exclusively been used in the United States, mainly to control air pollution.

Subsidies

Subsidies are a common and widely applicable policy instrument. They are particularly effective when they support activities with positive external effects.

However, in many cases this instrument has serious disadvantages. In the interests of fairness, it would seem more obvious to 'punish' the 'offender' for the negative effects of his activities than to 'reward' him for reducing these effects. Furthermore, subsidies are not the best means of imposing lasting restrictions on activities with negative external effects since they may result in a growth of polluting activities. In some cases subsidies may be selected on a temporary basis.

For instance, combining subsidies with other instruments can reduce or completely eliminate the drawbacks. When an extra charge on products or activities with negative environmental effects is combined with a subsidy in the form of a reduction in tax on less polluting products and activities, this may ensure - if the charges and subsidy are set at the right level - that the overall burden of taxation and the government deficit do not increase. For the target group in question, the tax changes will be 'cost neutral', which means that the overall volume of their activities will not increase.

Subsidies are frequently used in Dutch environmental policy in combination with other instruments. The subsidy on catalytic converters and lead-free petrol is in fact a form of tax differentiation. The subsidy available to those opening manure processing plants is combined with earmarked charges, restrictions on the spreading of manure and compulsory accounting of the amount of manure produced and used. In view of the major disadvantages of subsidising polluters, this instrument will not be examined in any further detail.

Deposit-refund systems
Deposit-refund systems are a way of virtually entirely preventing undesirable environmental practices. They basically constitute a system of regulatory levies on what is essentially avoidable behaviour, making the regulatory effect very pronounced. However, deposit-refund systems can also be seen as a way of creating a market for environmental resources on which no price has hitherto been placed. Activities which could be performed free of charge now receive a price tag.

One essential precondition for implementing a deposit-refund system is a suitable basis for levying the deposit. The product or packaging must have a recognisable, measurable 'residue' which can be collected at a central point. The financial incentive lies exclusively in returning the 'residues', and not on the scale or method of use.

For several decades the Netherlands has had a deposit-refund system on beer and soft drink bottles. A new deposit-refund system for engine oil was recently announced. Similar plans exist for cars and electronic equipment. Other forms of deposit-refund system exist virtually exclusively in Scandinavia. In Sweden, for example, deposits are charged on aluminium drinks cans and cars. Experience in Sweden has shown that the amount charged for a deposit should not be too low. Return rates of 80 to 90 per cent have been achieved with deposits on cars of approximately 150 guilders. Deposit-refund systems for batteries have also been planned or have recently been introduced.

Other transaction instruments
The group of instruments based on transactions also includes liability, ownership rights and contracts. These instruments were discussed in section 2.3. It only remains to add that, like charges and tradeable permits, they lead individuals and companies to take decisions on financial grounds. They also allow reductions to be achieved at the lowest possible cost.

2.5 Instruments of persuasion

2.5.1 Definitions

This section deals with forms of government action which aim to *persuade* actors in society to change their behaviour or which aim to encourage them to persuade each other to change. Instruments of this type are categorised as *social regulation*. This section is concerned primarily with the potential for social regulation to function independently and not merely as a necessary aid to other forms of regulation. It is obvious that a licensing system or charge cannot be imposed without holding consultations and conducting information campaigns.

Social regulation covers both the righthand column and the bottom row of figure 2.1; the righthand column because government can itself be an actor as it tries to persuade social actors, and the bottom row because public law instruments might also aim to induce social actors to persuade each other to act in a certain way.

As has been said, government uses social regulation to persuade social actors to change their practices. As far as the environment is concerned, efforts are best concentrated on *voluntary* behavioural change, since environmental awareness is very high at present. However, this does not necessarily mean that there is a general willingness to make the changes which will ultimately be required, although the ground has been prepared for the environment to become a matter of course in any decision.

Ideas about what social regulation actually is are currently undergoing major changes. Two aspects are dominant: the environment as a problem of *information and awareness* (the communicative aspect) and the environment as an *organisational and administrative* problem (the structural aspect). The communicative aspect can be divided further into *information and education campaigns*, and feedback of information to produce *environmental reports*. Government faces a problem of enforcement only in so far as it must ensure that environmental reports are indeed published, that they meet the requirements and are taken into account in decision-making. The organisational or structural aspect boils down to persuasion by means of *informal agreements* (such as undertakings, gentlemen's agreements and covenants). It is important that the further specification and enforcement of environmental policy be delegated to designated third parties. The enforcement effort on the part of the government can remain largely restricted to delegating these tasks and keeping track of developments.

As with transaction instruments, government does not aim to prescribe what practices should ultimately be adopted; it takes a more 'hands off' approach. However, government is not entirely absent, but creates the conditions in which individuals can take their own responsibilities.

Compared with other forms of regulation, social regulation might seem to have only a weak effect because it relies exclusively on voluntary cooperation. It is not, however, lacking in sanctions, speculating as it does on the effectiveness of indirect social pressure. There are many variations of this enforcement mechanism. Although relations between the members of our fragmented modern society are less strong and more anonymous than they used to be, informal control mechanisms have not entirely disappeared; they have merely changed in character. The mass media now play an important role in shaping public opinion. Publicity has become a form of enforcement in itself, a fact which organisations such as Greenpeace have been quick to recognise and exploit. Thus, information can ultimately be translated into economic sanctions; a company with a bad environmental image might well lose its share of the market.

As with other types of regulation, social regulation aims to ensure that the fact that environmental problems affect us all is reflected in our behaviour. This requires a rethink of norms and values, and such processes are not well understood. However, there is a real possibility that the sudden change in attitudes towards smoking, for example, has resulted from the publicity about its effect on non-smokers. Similarly, environmental problems affect more people than the ones who cause them. This might favour the creation of informal social control mechanisms to resolve the 'social dilemma' over

the environment. For this kind of internalisation to come about, it is essential that people are aware of the external effects of certain practices, but that is not enough in itself. People are often only prepared to transform an informed positive attitude into a change of behaviour if they know that other relevant parties are prepared to do the same.

Social regulation can help this process of environmental standard-setting in a number of ways. Reliable information is essential if the social dilemma is to be resolved. People need a collective image about the state of the environment, developments, causes and effects before they become environmentally aware. General information of this kind (provided through information and education campaigns) must be followed by more specific information on the environmental aspects of alternative behaviour, in order to 'teach' people how to convert their new attitudes into environmentally sound practices. The need for this type of information appears to be great. It will be most effective if the environmentally friendly alternative can be seen to produce a considerable environmental dividend, while offering advantages to the actor, or at least leaving his standard of living untouched.

Such a double advantage can also act as an extra stimulus for the creation of social control processes, which will naturally always focus on actual behaviour. A feedback of information on the environmental effects of such behaviour can enhance this effect, and indeed this may be the explicit aim. If the aim of social regulation is to encourage social actors to voluntarily take on responsibility for certain aspects of the environment, some kind of public accountability could be introduced. This kind of feedback would offer not only an insight into what 'others' are doing - an important factor in resolving the social dilemma - but would expose these actors to mechanisms of informal social control which can be much more effective than the sanctions involved in direct regulation, for example.

This approach assumes the existence of an active society in which social movements and the media make an important contribution to social control. Where the environment is high on the public agenda, one can assume that this kind of control will potentially be very effective. For these processes of persuasion and control to work, information must be available. Groups who wish to help in this process must be given the opportunity to build up the necessary expertise. Social regulation which seeks to support efforts at persuasion will require certain support facilities, such as legislation on the provision of information. Section 2.3 examined the possibility of using private law to force companies to publish certain information. Including 'good environmental practice' as a general standard in private law would also give a legal basis to attempts by individuals to persuade others to change their behaviour.

Just as structures and procedures are an important part of the communicative aspect of social regulation, so they play a leading role in the structural aspect. Here, persuasion takes the form of agreements between the government and social actors in which the parties take on certain responsibilities. The structuring of responsibilities (deciding who to involve) is decisive when it comes to resolving the social dilemma. Expectations

about what 'others' (such as competitors) should do can be more or less formalised in agreements. The system of sanctions which government has at its disposal to ensure that social actors fulfil their undertakings obviously also constitutes a form of social control. The sanctions which social actors may impose on each other might also be based on social control, although there are other possibilities. Thus, society has many ways of labelling good and bad behaviour ('Approved by the .....', 'Officially recognised by the ....'), but private law also offers possible sanctions. Identification of relevant actors is therefore very important. Conflicts of interest and lack of communication between competitors, between producers and consumers and environmental groups can thus be resolved, at the same time breaking the social dilemma. In these situations, government might take on the role of mediator.

This form of administration is becoming increasingly popular in environmental policy. It is therefore examined in more depth below, using the principal-agent theory.

Informal agreements

Modern theory of organisation has contributed ideas about the appeal of 'informal agreements' which have helped to shape environmental policy. Relationships within and between organisations are often characterised by 'principal-agent relationships', in which the extent to which the individual agent takes account of the objectives (environmental or otherwise) cannot be prescribed, but depends on the personal motives of the agent and the motivating or demotivating nature of the actions of the principal. In this kind of relationship it is essential that a lack of information and transaction costs hinder a direct conflict between benefit and sacrifice. The principal may not monitor what the agent is doing, for any number of reasons (such as commercial confidentiality). As a result, control by means of price incentives is less effective, or even entirely ineffective, and there can be a loss of what Leibenstein calls 'constraint concern' [8]. In this sense, environmental practices are not only constrained by a lack of information and inertia but also become selective, because they depend to some extent on differences in motivation from one individual to another and in the principal-agent relationship.

It is this selectivity which can be reduced by social regulation, through a policy which maximises environmental awareness ('constraint concern') in consumption and production patterns. It is of paramount importance that environmental policy is organised in an interactive layered structure, which optimises the amount of information available, minimises transaction costs and fully exploits the potential for influencing patterns of production and consumption. This would give rise to a structure with, at the highest level, government acting as 'environmental principal', and industry as the 'agent', with industry organising itself into principal-agent relationships within

[8] H. Leibenstein, 'Allocative Efficiency vs. 'X-Efficiency''; The American Economic Review, 1966, vol. 56 and H. Leibenstein, Beyond Economic Man; Cambridge, Harvard University Press, 2nd edition, 1980.

individual sectors, and establishing its own environmental practices, such as company environmental policy schemes.

An interactive structure of this type does not constitute a hierarchical chain of command, but a network within which the principal recognises the fact that only the agent has the information and internal organisation to operate in accordance with common objectives. With social regulation, concrete environmental objectives should preferably be generated by the target group itself. These objectives can then be established in a process of communication with the government, with the agent undertaking certain obligations. After that, the principal can enforce the regulations at arm's length. The administrative methods employed in such informal agreements also lend themselves perfectly to the regulation of company environmental policy schemes in situations where government has insufficient specialist knowledge of the process concerned to decide what may and what should be done.

2.5.2 Instruments

This section will briefly examine the instruments of social regulation which the government has at its disposal, and of which it is making increasing use.

2.5.2.1 Instruments of communication

Information campaigns: what the government can and must do

The Government Information (Public Access) Act (1980) obliges the Dutch government to actively provide the public with information in the interests of democracy. The provision of general information by the government on the state of the environment, causes and effects, is not, therefore, controversial. The whole thing becomes more problematic when information and education campaigns conducted by government are designed to influence behaviour. In this kind of situation, government has to ensure that competition is not distorted and that certain interests are not damaged, unless it has a parliamentary mandate to do so. If the information is undisputed, government can only educate the public and industry in alternative environmental practices and their effects. If there is some dispute about the information to be publicised - a situation which is not unheard of in the field of environmental issues - government must obviously either make it clear that the accuracy of the information is uncertain, or pursue an enabling policy, i.e. enable others to gather and disseminate information. Government can facilitate self-regulation in several ways, including by ensuring that adequate know-how exists, ensuring that non-profit-making organisations also have access to information and promoting the dissemination of this information to the public.

General public education

Of all the information and education activities carried out or supported by government, public education is the most important. In the Netherlands, it takes a number of forms, including:

- environmental education: this type of education, incorporated into a number of subjects taught at primary and secondary school, is essential to the creation of public support for a society geared towards sustainable development;

- the 'groundswell campaign': this government education campaign was launched in 1990 and will run till 1993. It emphasises the internalisation of environmental values, while suggesting environmentally friendly alternative forms of behaviour.

Campaigns designed to alter public behaviour

These have not yet been fully developed. However, there are a number of examples:

- campaigns conducted by the public utility companies to promote conservation of energy and water;
- 'E-teams' ('E' standing for energy) who provide information on energy conservation and help the public make their homes more energy efficient;
- the environmental telephone information line, mainly designed for consumers with questions about the environment. If the government were to pursue a clearer product policy many of the consumers' questions would not arise. Work is therefore being done on the setting up of:
- an environmental labelling system, which is to be introduced shortly in the Netherlands. The 'ecolabel' will indicate that a product meets certain environmental requirements, enabling the consumer to choose the product which is least environmentally damaging. This will eventually have the effect of making the entire range more environmentally friendly, thus decreasing the total environmental burden;
- grants to nature conservation and environmental groups. These organisations will work together at European level with groups from other countries in the European Environment Agency.

Information campaigns directed at companies and organisations

Industry has a growing need for information on techniques for energy conservation, waste prevention, integrated environmental management, company environmental policy schemes, etc. Many information schemes have therefore been set up for and by industry over the past few years, including:

- the PRISMA project on waste prevention, which was initiated by Dutch government to screen companies for waste and emission prevention potential;
- a national network of innovation centres, whose aim is to make technologies accessible and applicable for small and medium-sized companies;
- the industrial environment service, which gives information and advice to small and medium-sized companies;
- the environmental link scheme, which links supply of and demand for environmental goods and services.

At international level, governments, major European companies and research institutes are working together in the field of environmental technology, among other things, within the framework of the Eureka project. Monitoring systems are being developed for major environmental risks and risk evaluation.

Environmental impact assessments

The main aim of environmental impact assessments is to place the environmental interest on an equal footing with all other interests in decision-making. The generation of information is of key importance:

information on the environmental consequences of a proposed activity must be available to the decision-makers. The activities concerned will usually be industrial and infrastructural projects, oil and gas extraction and land development. One important characteristic of environmental impact assessment is its openness. This instrument was incorporated into Dutch legislation in 1987.

Compulsory feedback of information
In section 2.3 the Council called for companies to be obliged, under private law, to publish information on the environmental impacts of their activities. Such an obligation could induce significant change in behaviour. If employees, local residents and environmental groups receive information - not anonymously, but openly from each individual company - on the external effects of a company's practices, they can use it to exert public pressure on the company. Experience in Japan and the United States has shown this to be a very effective means of reducing unnecessary pollution.

An obligation to publish information can have a strong preventive effect and encourage industry to adopt environmentally friendly practices. This effect is enhanced by the possibility of the public to use this information to conduct campaigns against certain activities.

2.5.2.2 Informal agreements

Policy covenants
In this context, a covenant is understood to be a written agreement between public and private actors where, unlike the covenants discussed in section 2.3, legal enforceability is not the main concern. Much use is made in environmental policy of policy covenants between central government and industry to achieve certain environmental objectives through voluntary action and consultation. Such agreements have so far been reached on batteries, PET bottles, cadmium in drinks crates, CFCs in spray cans, phosphate in washing powder and asbestos.

In practice, the effectiveness and efficiency of this instrument depends on a number of factors. For example, problems of interpretation have been known to occur. It is therefore vitally important that a covenant makes clear what is expected of whom. There must also be agreement on whether emphasis is to be placed on the measures required or the objective to be achieved. If industry regards an agreement merely as an objective, while government interprets it as a set of responsibilities, problems are bound to occur. To prevent such problems of interpretation, government and industry are seeking to establish rules of thumb for the form and content of covenants.

A policy covenant does not generally entail much enforcement on the part of the government. It will bear even less responsibility for enforcement if it has not been closely involved in the creation of the covenant, such as when companies make agreements between themselves or with environmental groups. However, if the mechanism of social control between government and social actors and between social actors themselves is to work and the instrument is to be made as effective as possible, information on and

monitoring of compliance with the agreement will have to be necessary. But other sanctions are also possible. For instance, a covenant between government and a sector representative might result in private law suits between the sector representative and individual companies. A system of tradeable emission permits might also be agreed on (see sections 2.3 and 2.4).

Covenants can also operate at international level. In order to prevent distortion of competition on the common market, the Dutch government could seek to involve more foreign companies in covenants.

Social covenants
Informal agreements can also be made between social actors themselves, in the form of social covenants. Government involvement in such agreements differs from its normal role, since it takes no part in weighing up the interests involved. This task is delegated to society. Government's role is restricted to facilitating research, arbitration, the provision of services and procedures. The other parties to the contract are also expected to play a different role. The nature conservation and environmental movement is called upon to do more than simply appeal to people's morals; it has to actively appreciate the interest of the other party and show itself willing to find good solutions. The commercial party, on the other hand, must not emphasise the economic interest to the exclusion of all other and must show itself willing to agree to a trade-off of interests.

This instrument could be used more widely than is currently the case. However, if conflict is to be replaced by cooperation, it is essential that sanctions are available in the background, for instance in the case of tort.

Company environmental policy schemes
An environmental protection system can be defined as a systematic set of facilities designed to enable the environmental impacts of a company's activities to be identified, controlled and curbed as far as possible. It includes objectives, instruments, measuring and recording activities, inspections, education and training, environmental reporting (both internal and external) and environmental audits. Dutch companies which cause a major environmental burden or pose serious environmental risks (some 12,000 companies in total) are supposed to have set up integrated environmental protection systems by 1995.

A number of recent developments concerning companies should facilitate the introduction of company environmental policy schemes. For instance, strict liability is constantly being tightened up under national and EC policy. Companies are therefore being confronted increasingly with legal and financial risks and the consequences of environmental malpractice. The effect of environmental image on sales is leading more and more companies to set up environmental protection systems, as consumers, environmental groups, local residents and employees make greater and greater demands of companies' environmental record.

An obligation to publish information, which was called for earlier, would also encourage voluntary changes of practice, as could a norm enshrined in private law which states that the environment should not be polluted unnecessarily (see section 2.3).

2.6 The European dimension

2.6.1 Implications and possibilities: two sides

No examination of environmental policy and the instruments available to it would be complete without a look at the European dimension. This is necessary not only because of the fact that environmental problems transcend national boundaries but also because of the economic and legal implications of the Netherlands' position as a member state of the European Community.

The transboundary nature of many environmental problems is a fact which is generally fully recognised, but is also put forward as an argument or explanation for the fact that not all environmental problems can be resolved. The fact is, however, that, with the setting up of the European Community, the member states created a legal and administrative framework within which problems just such as these could be solved. The European dimension should not, therefore, suggest that environmental problems are beyond the reach of reasonable solutions, nor should it be regarded merely as an extension of national environmental policy. The Community should rather be seen as an integral part of the possibilities open to national governments in their pursuit of environmental protection. It should be taken into account in the national governments' process of policy planning, and in their selection of jurisdiction and instruments just as much as the existence of local authorities within the national system of government. Chapter 4 addresses the implications this might have for the dynamic development of policy.

The position of the Netherlands as a member state of the European Community does, however, affect its freedom to make policy and the scope for the national government to take autonomous policy decisions as it sees fit. The basis of and driving force behind the integration of European nations to one European Community is the common market and the dynamics of the society which exists within it. This has legal consequences in so far as national legislation and administration are obliged to observe the rules and legal order of the Community. Perhaps even more important is the fact that national policy has to operate in a free and open market, within which national governments have only limited sway over economic actors.

The position of the market as the basis of and driving force behind integration is often regarded as evidence that economic interests are accorded too much priority over other interests, including environmental protection. However, this is a distortion of the truth. The essence of the Community legal order is that the functioning of the internal market serves the joint interests of all states to such an extent that the decision as to whether to restrict or disrupt it cannot be left to the individual member

states - which are after all guided by their own interests and policy - but should be decided jointly by all member states. The Community has enough suitable instruments to control and restrict the operation of the market where this is in the general interest. However, whether this is necessary or desirable is not a matter for the individual member state to decide. This provides the basis for the first aspect of the European dimension mentioned above: the Community as a suitable regulatory framework for environmental problems which transcend national boundaries.

2.6.2 **The Community legal order**

The possibilities open to governments to pursue their own national environmental policy within the Community and such a policy's relationship with Community environmental policy must be seen within the framework and against the background of the constitutional order of the Community. This constitutional order is determined by the place and function of the common market and cross-border trade as a means of achieving the aim of the Community: to ensure the convergence and integration of the communities of the individual member states. It is not, therefore, based on a division of policy responsibilities between the Community and the member states. Basically, the member states are free to decide on all internal matters; however, a matter is no longer considered internal as soon as a problem or its solution has a detrimental or burdensome effect on cross-border trade. If this happens, the Community has the authority to pass any regulations necessary and a member state may not, unless it has been granted an exemption, take unilateral decisions on the desirability or necessity of measures which entail a disruption of cross-border trade. If the Community uses its power to regulate, the scope for individual states to pursue their own national policy is restricted.

It would not be appropriate here to examine the details of this constitutional order as reflected in the jurisprudence of the EC Court of Justice. Neither is it necessary; the legal order which has developed can be briefly summarised as follows.

Measures with exclusively internal effects

The member states are in principle free to take measures whose consequences are felt only within that state. The only exceptions are when the Community has sole responsibility for policy in the area in question (as is the case with agricultural and fisheries policy, and trade policy). However, the European Court employs a very restrictive definition of exclusively internal effects. Every measure which directly or indirectly hampers economic activities originating outside the member state, and is therefore likely to disrupt cross-border trade, has external effects. This is always the case if member states levy taxes on or set standards for goods and services coming from other member states, irrespective of whether these taxes and standards apply equally to goods and services originating within the member state itself. This is even more the case if the measures have a more negative effect on foreign products and services, whether or not they are a veiled form of discrimination. It applies equally if national measures place domestic goods, services and other activities in a more favourable position

than those of foreign competitors (because of government support or special or exclusive rights).

The primary aim of the EC Treaty is to protect foreign trade from the actions of national governments. A national government therefore has the freedom to impose taxes or standards on its own citizens and domestic commercial activities, thereby weakening their competitive position. It may not, however, do this if it prevents the markets of other member states from being legally closed to its domestic goods and services.

Measures with external effects
National measures with effects of the kind described above are generally only acceptable if their adoption is required in order to protect an imperative, non-economic interest (such as environmental protection). Furthermore, these measures should be effective with regard to their intended objective and their effects should be unavoidable and proportionate to the objectives. If those negative external effects arise from a de facto or de jure distinction between the domestic and foreign activities (which may or may not be a form of veiled discrimination), the Treaty must expressly provide for such an eventuality and the effects must be necessary and justifiable on those grounds.

When assessing whether a particular external effect is justified and in proportion to the interest in question, one must also take account of the fact that the products or services concerned are offered elsewhere in the Community under the legislation applying in that particular member state. If that legislation aims to protect the same interests, this should be regarded as adequate, unless additional or different requirements are necessary and justified on the grounds of the criteria mentioned above. Special regulations apply to some policy areas, such as tax and financial advantages for domestic manufacturing and goods.

The fact that the effects of a domestic measure mean that the above criteria are not met does not necessarily mean that it is not binding, only that it cannot be applied to cross-border trade if it would hamper exports. The consequences for domestic goods, services and other activities therefore apply fully (under Community law at any rate).

Matters specifically regulated by the Community
So far, we have discussed the general constitutional relationship between the powers of the member states and the basic principles of the Community. If the Community has laid down specific regulations on a particular matter, the possibility for a member state to impose its own regulations alongside those of the Community is primarily determined by the scope allowed by the latter. Those regulations might be directly binding or oblige the member states to bring about a certain situation. In the latter case, every organ of the national government is obliged, within its own sphere of responsibility, to comply, even if national legislation does not contain a statement to this (direct) effect. In so far as Community regulations allow scope for further domestic measures, these will have to meet the criteria discussed above.

It has already been stated that the Community in principle has authority over all matters which the member states can no longer regulate without distorting or disrupting the operation of the common market. On this basis, the Community has authority over virtually all environmental matters. However, since 1985, the Community has also had the power to act in situations where the justification lies not in the interests of the common market, but exclusively in the interest of the environment (art. 130R-130T of the EC Treaty). This is important to the extent that in cases where the Community acts solely in the latter capacity, the Treaty specifically states that the member states should be allowed the scope to take further measures. Where measures are also necessary in the interests of the market, this only applies if the regulations explicitly state this. However, if domestic measures lead to unjustified external effects, they cannot be justified on these grounds.

2.6.3 Implications for environmental policy and policy instruments

Environmental policy focuses on patterns of production and consumption. It is therefore almost by definition relevant from the point of view of the Community. This does not, however, mean that environmental policy need necessarily be Community policy. As long as the burden of environmental policy is exclusively imposed on domestic producers and consumers, a member state can take measures as drastic as it likes. Only if those measures begin to affect foreign producers, products or services do legal restrictions apply. Even then, Community law does not state that regulations can only be set at Community level. It basically forces member states to choose measures which are justified and effective and therefore affect the functioning of the market as little as possible. It is here that difficulties generally arise. The protection of one's own environment does not usually justify burdens being imposed on products and services originating elsewhere, under environmental conditions for which another member state is responsible.

The main implications of Community law are not therefore legal but practical and economic, in that member states are forced to limit the burden of their own unilateral environmental measures to their own economy. Since the member states no longer unilaterally decide who has access to their markets, domestic producers and service companies always have the option of avoiding the consequences of environmental policy by moving to another member state, without jeopardising their market. This need not be a bad thing for the environment if the consequences companies are seeking to escape are the result of attempts to protect the local environment. If the costs of moving production to a place where it causes no environmental problems are lower than the burden imposed by local environmental policy, this solution is the most effective in economic terms. However, if such a move merely shifts the problem elsewhere, the unilateral measures which forced the move must be regarded as a form of national self-castigation which contributes little or nothing to the protection of the environment. The Community system fosters more rational environmental policy in the sense that it confronts the member states with the costs of their own policy and the question of whether these really protect the environment or merely shift problems. It therefore forces member states to

devise policies whereby environmental problems are solved at the most appropriate level in technical, legal and economic terms and the burden is imposed on the appropriate parties.

Having said all that, though, it is not the case that member states may only concern themselves with problems which occur exclusively within their borders and must leave the rest to the Community. In essence, member states should not attempt to solve problems which occur elsewhere within their own borders or seek to shift the costs of their own problems and solutions onto others by distorting the market. Within these limits, member states have every opportunity to pursue their own policy, even on problems which can better be tackled at Community level. However, the realisation that a problem can ultimately be more effectively addressed by the Community, because either the scale of environmental problems or the market effects of an adequate solution make this necessary, should guide national governments' choice of policy instruments.

In this sense it is important that the Community is highly decentralised. The Community limits itself to harmonising and coordinating the actions of the member states; implementation, enforcement and often, also, specific regulations are matters for the member states. This structure is less suitable for solutions which require direct control and intervention through detailed regulations and licensing systems. Both the structure and the key role of the common market within the Community mean that Community regulations usually tend towards general standards and market-based regulations.

Where possible, the choice of national policy instruments should anticipate this tendency, all the more so since Community law calls for this kind of orientation. The implication is that the more a government intervenes in the economy the more difficult it is to justify any external effects and the more burden will have to be placed on the domestic economy.

The Community has virtually no influence over social regulation, as the recent boycott of Dutch products in Greece demonstrated. Covenants with industry will have to be assessed in terms of their effects on competition, but this still leaves enough scope for bona fide agreements on environmental protection. The Community also imposes no significant restrictions on regulations governed by private law. It in fact offers the means of widening their impact, in the form of the recently amended 1968 Convention (see the Reinwater judgment). Community requirements concerning financial regulations are more stringent, but still limited as yet. At the moment they only involve a ban on formal or actual discrimination and on veiled support (by imposing different rates on different sectors). However, the harmonisation of taxes and excise will mean that Community regulations become more restrictive, not only in terms of the basis on which tax is levied, but also the purpose for which the revenue is used. If it is used for environmentally friendly production in the individual member state, it might be regarded as support, or equated with a banned tax with the same effect.

Community law's most stringent restrictions concern direct regulations, particularly in those cases in which government is closely involved with the division of burden through a licensing system. However, there are degrees. A system of tradeable permits, for example, is more compatible with Community law than a system whereby government divides the burden in each individual case. Similarly, it is easier to justify imposing standards exclusively on domestic products than on products and services in general, while national measures that put in effect a heavier burden on incoming goods and services are the most difficult to justify under Community law. Nevertheless, if there were a recognised interest and a convincing need for such measures, Community law would not oppose them.

2.7 Final comments

In the preceding sections, a range of environmental policy instruments has been discussed. Direct regulation, financial instruments, regulation under private law and instruments of persuasion represent decreasing government involvement in enforcement, and increasing responsibility on the part of the individual, companies and organisations to incorporate environmental values in their decisions. In the case of direct regulation, the government states (explicitly or otherwise) what burden may be imposed on the environment and what interests are to be given priority, and will often have to decide on bans, regulations and licences on a case-by-case basis. When it comes to financial regulation, government is also responsible for defining the environmental space and priorities. However, these are reflected in a tariff which will usually be more universally applicable than direct regulations and will leave the actor in question more opportunity to weigh up his or her own priorities (pay or avoid). This will have an important effect on the quality of new technologies and processes. In the private law option, self-regulation among contracting parties is the key element. They decide the environmental values on which their transactions are based (examples include deposit-refund schemes and insurance schemes). The government merely sets out the general rules of play (concerning liability, for example) and will act as referees, should a dispute arise. With social regulation, providing information on desired behaviour is more important than the public sanctions which non-compliance entails. Sanctions are of a more social character, aimed at the self-image of the environmentally aware consumer and the corporate image of companies. This type of regulation therefore provides excellent support for the awareness-raising and learning processes.

An environmental policy which aims to take the burden off public administration will have to focus above all on enabling individuals, companies and organisations to gather information about and 'do their bit' for the environment. In the opinion of the Council, this potential is often underestimated, or at least is not systematically exploited. This is all the more regrettable given the fact that environmental awareness and the willingness to give shape to this individually or as an organisation form the necessary base for the social acceptance of a policy based on public sanctions, which is often the only way to overcome the social or prisoners' dilemma.

An environmental policy is often 'layered' in the sense that social and private law regulations form the basis and largely reduce unnecessary environmental burdens in themselves. Environmental policy measures governed by public law in a narrower sense can thus focus on behaviour which is unavoidable, given the current state of technology. However, instruments should not be assessed entirely on their own merits, but should also be seen against the background of the problem which they seek to address. To make this clearer, the Council will characterise the different situations which can arise under the target group policy in the following chapter. This information may also be used as a basis for selecting the instruments discussed above.

On the selection of instruments 3

3.1 Introduction

If environmental objectives are to be achieved, organisations and individuals will have to change their behaviour radically. As was shown in chapter 1, this will require great effort on the part of policymakers. It is therefore essential that the correct instruments are chosen, and this chapter provides a systematic framework for doing just that.

Whether or not an instrument is suitable does not depend solely on the characteristics of the instrument itself; it also depends on the problem at hand and the general principles of good management (effectiveness, efficiency and legitimacy). Section 3.2 analyses a number of relevant characteristics of the many environmental problems we face (situation characteristics). The Council regards such an analytical approach as essential if decisions on the instruments to be used are to rise above the level of casuistry. These situation characteristics can also be used to make a classification of environmental policy problems (section 3.3). This chapter concludes with an analysis of a number of environmental problems in the Netherlands using the method presented (section 3.4).

3.2 Situation characteristics

The selection of instruments depends largely on the environmental problem in question. For instance, there is little point in trying to persuade people not to use their cars if they are unwilling to do so (because of the high cost of alternatives or a strong preference for the car). The situation is often complex, combining many different characteristics. In many cases, several target groups contribute to one problem. The characteristics of these groups are also part of the problem to which policy has to apply. Therefore, different instruments often have to be deployed for different target groups in order to tackle a particular problem.

Problems of environmental policy can be described in terms of three groups of characteristics, which are examined in depth in the Dutch version of this report. They can be briefly summarised as follows:

1. *recognisability*: the extent to which activities can be measured or assessed, the recognisability of the effects and causal relationships between impacts and damage, and of the damage itself, and environmental risks and uncertainties.
2. *structure*: the number of sources in the target group, the number of policy 'subjects' (actors to which policy should apply), and the geographical and time scale of the impacts.
3. *resistance* from and *costs* to the target group: high costs/drop in standard of living, diverse costs, technological potential, low financial strength, balance of power between target group and government, resistance/contrary objectives and time involved.

In addition, there are certain circumstances in which one particular type of instrument has to be used, irrespective of other factors:

1. *nature of impacts*: some activities have such serious health effects that the most effective instrument is an outright ban.
2. *urgent problems*: problems which have to be cleared up within a matter of days, weeks or months require instruments which rapidly take effect. In such situations, direct regulation in the form of special powers is the most effective instrument.
3. *major risks and uncertainties*: in cases where failure to meet targets leads to major risks or great uncertainty, it is important to choose instruments which are most likely to be effective. Nuclear waste is a case in point. Strictly enforced forms of direct regulation are the most effective instrument in such situations.

Financial and private law regulations are not very suitable in the case of activities which are difficult to measure or assess, since for such instruments to be effective, it must be possible to identify undesirable behaviour at an individual level. Social regulation is more suitable in this type of situation. However, if the target group has a strong preference for a certain practice, social regulation would be fairly ineffective. Although policy should ideally directly target the polluting behaviour, measuring problems may mean that things have to be approached in a different manner. Consider, for instance, the problem of people throwing batteries away with the rest of their household waste. It is virtually impossible to identify individual incidents, even on the basis of random sampling. Direct or financial measures would be impossible to enforce. Social regulation in the form of education campaigns would seem to offer the most potential, although there must be sufficient public support for this to succeed. Alternatively, one might try to choose another point of intervention, by discouraging manufacturers from producing highly polluting batteries or encouraging shopkeepers to charge a deposit on them. Measurability and assessability are not the only factors which have a bearing on the selection of instruments. Some types of instrument rely on information on the impacts of behaviour and the causal relationships between activities and impacts. This applies to private law instruments (particularly liability for damage to property) and some forms of social regulation (such as ecolabelling systems and education campaigns).

If pollution comes from a large number of sources, direct and financial regulation and regulation under private law may be difficult and expensive. In such cases, social regulation might be considered, or another point of intervention can be sought. This point should be closely linked to the emissions and involve as few actors as possible. One example concerns the consumption of energy by six million Dutch households. It is virtually impossible to identify excessive use at an individual level. If social regulation is ineffective, an alternative intervention point might be chosen, for instance the energy-suppliers, and a mandatory charge on energy consumption might be introduced.

In situations where a change in behaviour entails high costs or an erosion of the standard of living of the target group, it is vital that the instruments chosen minimise costs by bringing about the desired change in the most

efficient manner possible. In principle, financial instruments governed either by public or private law would be called for in such cases. If the costs are not distributed uniformly throughout the target group, the most efficient method would be to introduce financial regulations or a system of tradeable permits. The overall environmental objective would thus be achieved at the lowest cost; those for whom a change in behaviour would prove expensive can always choose not to respond to the financial incentive. This would keep the overall costs to society to a minimum (given the scale of the desired change). This 'least-cost-property' offered by financial and private law instruments is an important advantage in situations where costs are high or unevenly distributed. Unevenly distributed costs are often caused by the fact that existing technology in the target group may diverge. If it is difficult to forecast how technology will change, regulatory charges are preferable. These public law financial instruments offer possibilities for target groups to change their behaviour at the moment they prefer.

If a change in behaviour entails high costs, price elasticity will generally be low. It is generally accepted that low elasticity is a particular drawback when it comes to using regulatory charges, making direct regulation necessary. It should be stressed that this picture is rather one-sided. Low elasticity is an indication that the environmentally friendly alternative is valued less highly by the target group (in terms of standard of living and wellbeing) than the current, environmentally unfriendly practices. In such cases, any instrument will contribute to these high costs or to the erosion of people's standard of living, or will prove entirely ineffective. Considerable enforcement problems can also be expected, particularly when direct regulation is used. However, the costs can be kept to a minimum by using financial or private law regulations.

Therefore, low price elasticity is a drawback with any instrument. It indicates that the government's and the people's objectives are in conflict. It can be regarded as an indicator for a policy's chances of success, but not as a basis for choosing instruments.

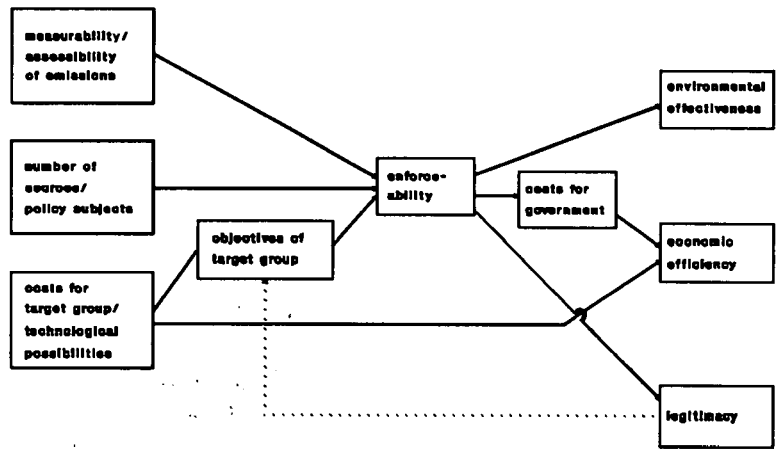
Naturally, when costly measures (direct regulation, financial instruments) are introduced at national level, due account must be taken of the competitive position of Dutch companies on the international import and export market. In such cases the rule, set out in chapter 2, that taxes should preferably be levied on inputs, does not apply; taxes can best be levied on products (outputs) in these situations. Conflict with EC regulations (which state that no taxes should be levied or refunded at borders) can be avoided by levying the tax on consumption. However, in view of the intricate distribution network for consumer products, taxing consumption might lead to high administration costs and enforcement problems. This means that the practicalities (competition, administration costs) have to be balanced against the principles (the polluter pays) on a case by case basis.

3.3 Classification

The situation characteristics discussed in section 3.2 do not exist in isolation from each other. Many occur simultaneously. For example, high costs often

cooccur with a target group which is sensitive to high costs; a large number of sources will often (but not always) involve a large number of actors. Furthermore, the extent to which a situation characteristic determines the choice of instrument is related to general principles of good management. The criterion of *effectiveness* highly depends on the enforceability of an instrument. Secondly, *the efficiency* of instruments plays a role. This involves cost characteristics, both to the target group and to the government. The principle of *legitimacy* also depends on enforceability, because free riders can undermine the credibility of the regulatory system. This relation between principles of good management, enforceability and situation characteristics is illustrated in figure 3.1.

Figure 3.1 The relation between principles of good management, enforceability and situation characteristics



Three characteristics in particular determine the choice of instrument: *the extent to which the activity can be measured or assessed*, *the number of sources* and *the costs to the target group*. These characteristics can be used to formulate a rough classification of the situations encountered in environmental policymaking. The classification divides situations into seven types, giving a reasoned choice of instrument for each type of problem. This is illustrated in figure 3.2.

Figure 3.2 Types of situation and policy instruments

Measurability of/ access to emissions	No. of sources/ actors	Costs (differences)/ technological possibilities	Type of problem	Primary instrument
good	small	small	1. clear	D (S)
		large	2. distribution	F P (D)
	large	small	3. manageable	F P S (D)
		large	4. heterogeneous	F P
bad	small	not relevant	5. invisible	D
	large	small	6. diffuse	S
		large	7. complex	?

D = Direct regulation; F = Financial instruments; P = Private law; S = Social regulation. Options given in brackets are less suitable.

The first type of situation can be regarded as *clear* and easy to regulate. Activities are easily measured and assessed, there are few sources and relatively low costs (and cost differences). The impact on landscape of gravel extraction is a good example of this type of situation. Since the target group is small, thus making enforcement easier, it is not difficult to find a suitable instrument. Direct regulation in the form of quotas (and, in the case of gravel, of an obligation to restore the landscape after operations have ceased) would probably be the most suitable instrument. This type of instrument can be tailored precisely to suit the situation. Covenants are another effective means of tailoring measures to specific situations.

The second type of situation *(distribution problems)* will generally involve activities which are easily measured and have a small number of sources and high costs. An example of this type of situation is the emission of acidifying substances by electricity generating plants, where high costs dominate. They can, however, be reduced using instruments which distribute the costs of emission reduction cost-effectively among the target group. If government knows enough about the technical potential which exists and the costs involved, separate technical standards can be set for each individual member of the target group. If little is known about these aspects of the situation, or a restriction of the freedom of choice is held to be undesirable, tradeable permits or regulatory charges are preferable. If there is good technological potential for clearing up the problem, regulatory charges are most suitable, because they give the target group the opportunity to use the timescale for emission reductions as a variable when deciding on the best way to minimise costs.

The third type of situation (the *manageable* type) will involve activities which can easily be measured, and are characteristerised by a large number of sources and relatively low costs. One example is CFC emissions (which in themselves can not easily be measured, but can be controlled by choosing products containing CFCs as the intervention point). This combination of characteristics means that the problem can be approached from different angles. In view of the measurability and the low costs, enforcement problems are unlikely to arise. In principle direct regulation (a ban on products containing CFCs), financial instruments (tax on products containing CFCs), regulations governed by private law (liability) and social regulation (covenants with manufacturers) are all suitable. In view of the large number of sources, the administration costs of direct and financial regulation can be limited by opting for another intervention point. It should, however, be noted that this is more difficult with direct regulation than with financial regulation.

The fourth type (the *heterogeneous type*) is characterised by activities which can easily be measured or assessed, and have a large number of sources and high costs and cost differences. An example is domestic heating. The environmental aspects of the situation (CO_2 emissions, exhaustion of energy resources) can be dealt with through measures aimed at fuel consumption. The costs in terms of an erosion in standard of living ensuing from a change in behaviour (setting the thermostat lower) will be high for at least part of the target group. With this type of problem, there is often a good deal of unexploited technological potential (such as double glazing). The combination of good measurability and assessability and large cost differences means that the most appropriate instruments are financial, because - also considering the least-cost-property - they restrict the costs of behavioural change. If there are good technological options, regulatory charges and environmental taxes can reduce costs even further, because they enable emission reductions to be timetabled in the most cost-effective way. Some forms of private law also introduce economic factors, thereby ensuring that change occurs at the least cost.

The fifth type of situation (the *invisible type*) is characterised by activities which are not easily measured or assessed and by a small number of sources. There are not many examples of this type of situation, because it is usually easy to monitor a small number of sources. One example is small-scale accidents which release radioactive substances from nuclear power stations. Technical standards are suitable for dealing with these situations. However, they must reflect the specific circumstances of each member of the target group. In this way, the cost structure can be taken into account to a certain extent.

The sixth type (the *diffuse type*) involves activities which are difficult to measure and assess and are characterised by a large number of sources and relatively low costs. One example is dropping litter in the countryside. The costs of change are low, because one may reasonably assume that it will not be a burden to take the litter home. The difficulty of measuring and assessing the activity means that direct regulation and financial instruments

(apart from deposit-refund systems) are entirely unsuitable. Social regulation is the best way to deal with such problems.

The seventh and final type of situation involves activities which are difficult to measure and assess, with a large number of sources and high costs (the *complex type*). One example is the illegal dumping of chemical waste. In some cases, such behaviour is due to laziness, while in others it is caused by the exceptionally high costs of processing. There are few policies which can effectively deal with this type of problem. Most forms of direct and financial regulation need a specific point of intervention. For most regulations governed by private law (liability, binding covenants) to be effective, an offence has to be established. Social regulation appears at first glance to offer a good solution. However, social pressure will have little effect on those members of the target group who face high costs if they adopt more environmentally friendly practices. In some cases, the intervention point can be changed by rewarding environmentally friendly behaviour or introducing a deposit-refund system. If, however, the alternative practice is also difficult to monitor (think of the work involved in listing and analysing thousands of types of chemical waste), this indirect method is also unsuitable. To a certain extent, environmental problems of this kind are resistant to policy.

This classification can be regarded as a 'preselection method'. Naturally, all aspects of each situation must be taken into account in the final choice of instruments. This method does not determine final choices, but it is a good way of making an initial assessment of the most suitable instruments: in situations with certain characteristics, certain instruments are more suitable than others. Using the characteristics of specific environmental problems, the method offers a means of balancing the pros and cons of the instruments available against the total enforcement capacity required.

Table 3.1 indicates how each Dutch target group/problem combination can be classified. Firstly, one must establish whether emissions can be measured or assessed, whether the target group consists of a large number of sources and whether high costs or a great deal of cost differentiation are involved. In some cases, subgroups have been identified within a target group. On this basis, an initial, tentative selection of instruments can be made for each environmental problem. The ultimate choice depends on all the relevant characteristics of the situation.

Table 3.1 Classification of target groups and environmental problems

TARGET GROUP/ environmental prob.	Subgroup	Easy to monitor?	Large no. of sources?	High costs/ cost diffs?	Main criterion	Type of situation	Main inst.
AGRICULTURE							
grnhse effect/energy	hothouses	A	Y	Y	C	4	FP
acidification	int. livestk	N/A	Y	Y	C?	7/4	FP?
eutroph./disposal	int. livestk	Y	Y	Y	C	4	FP
parching	arable	A	Y	N	-	3	FPS(D)
dispersal	arable	A	Y	N	-	3	FPS(D)
TRANSPORT							
grnhse effect/energy	cars	A	Y	Y	C	4	FP
dispersal/disposal	car plant[a]	Y	N	Y	C	2	FP(D)
ELECTRICITY SUPPLY							
grnhse effect/energy/ acidification	-	Y	N	Y	C	2	FP(D)
INDUSTRY							
grnhse effect/energy	-	A	Y	Y	C	4	FP
ozone layer	[b]	Y	N	?	Ef/C	1/2	DFP
acidification	refineries	Y	N	Y	C	2	FP(D)
dispersal	chem. ind.	N	J	Y/N	E	7/6	?/S
disposal	-	N/A	Y	Y/N	E/C	7/6/4/3	[c]
parching	-	N/A	N	Y	E/C	5/	DFP
CONSTRUCTION IND.							
grnhse effect/energy	-	Y	Y	Y	C	4	FP
ozone layer	-	Y	Y	N	-	3	FPS(D)
disposal	-	Y	Y	N	-	3	FPS(D)
CONSUMERS							
grnhse effect/energy	-	A	Y	Y	C	4	FP
ozone layer	-	A	Y	N	-	3	FPS(D)
acidification	[d]	N	Y	N	E	6	S
dispersal	-	N	Y	N	E	6	S
disposal	-	N/A	Y	N/Y	E/C	7/6/4/3	[c]

Y = Yes, N = No, A = Assessibility

Main criteria: E = Enforceability, C = Costs, Ef = Effectiveness
Instruments: D = Direct regulation, F = Financial instruments, P = Private law, S = Social regulation

a Recycling of old cars
b Manufacturers/importers of ozone depleting substances
c Further differentiation by objective and/or subgroup necessary
d Emissions of volatile organic compounds

A single system of classification of this type is of strategic importance to government policy. Deploying instruments and enforcement capacity in the most effective way enhances the credibility of environmental policy, creating more public support. It is also an effective means of reducing the costs of behavioural change.

Level of application

Now that the method has been described, we turn to the question of the best level at which to apply it: continental, national, municipal or individual target group? In principle, it can be used at any level, although the outcome will differ from one level to another. The higher the level, the more sources and the more diversity in terms of costs. This means that, when applied at a high level, the classification system will frequently indicate that the problems in question are heterogeneous (type 4) or complex (type 7). According to this system of classification, the former can best be tackled by financial instruments or regulations governed by private law, while no instruments are really suitable for dealing with complex problems. The lower the level at which the method is applied, the smaller the number of sources and the less cost diversity will be found. Depending on whether activities can easily be measured or assessed, situations will as a rule be classified either as clear (type 1) or invisible (type 5). Both types are best dealt with by direct regulation, although this is not the most efficient means. In the Netherlands the environmental objectives have been specified down to the level of target groups and subgroups, which means that a certain degree of inefficiency is inherent.

Ideally, the level at which policy is implemented should be pitched so that it can cope with both environmental and economic effects. In most cases, the ideal level will be global or European. This applies, for instance, to the greenhouse effect, acidification and the depletion of the ozone layer. Chapter 4 examines the ideal jurisdiction and strategies.

3.4 Examples

To apply the method presented here to environmental policy as a whole would be beyond the scope of this report, since it would entail analysing several hundred combinations of problems and target groups. The Council has therefore decided to give only a number of examples, examining one target group (agriculture) and one environmental problem (energy consumption/greenhouse effect) in more detail. It also examines one subgroup (car users) and one target group/problem combination (domestic waste). These examples were selected on the basis of the actual developments discussed in chapter 1.

3.4.1 Agriculture

All subsectors/target groups in the agricultural sector cause environmental problems to some degree or other. Hothouse cultivation, for example, is a major contributor to the greenhouse effect. Another problem caused by the agricultural sector is eutrophication. This is a very serious problem in some parts of the Netherlands and is therefore examined in more detail below. It is caused to a large extent by cattle farming and intensive livestock farming.

Also the problems caused by the crop protection agents used in many agricultural subsectors will be discussed as an illustration of the situation characteristics method.

Eutrophication

In the case of the manure problem - especially in cattle farming - individual emissions are difficult to measure, which makes it difficult to enforce the Dutch Fertilizers Act. Direct regulation is not, therefore, a very effective means of inducing farmers to alter their practices. Emissions from organic fertiliser can be measured to a certain extent through the number of animals or the composition of feed. The problem of artificial fertiliser can be assessed through manufacturers.

There are a fairly large number of sources for emissions of this type. The costs to the target group of changing their practices are often very considerable and differ according to regional and other circumstances. This problem is therefore classified as a heterogeneous problem (type 4), which in principle means that it can best be tackled by financial and/or private law regulations. Tradeable permits are not very suitable in situations where a large reduction in emissions is required. Charges are inappropriate because of the need to protect the competitive position of cattle farmers which rules out any measures which lead to a sharp rise in costs. Furthermore, EC regulations make it impossible to feed back any revenue into the sector. Surplus charges produce fewer extra costs than charges on the total amount of manure produced. However, manure 'accounts' can easily be falsified, making enforcement difficult.

Deposit-refund systems cost the target groups relatively little compared to charges, as long as they adjust their behaviour. A deposit on an input like livestock feed can ameliorate the enforcement problem, because this input enters the country in bulk flows, while emissions are diffuse. The level of deposit charged might be based on the nitrogen content (nitrate is a major cause of acidification) and can be fully or partially reimbursed if the farmer demonstrates that he has disposed of the manure in a responsible manner, for example by spreading a limited amount on his own land or delivering it to a manure processing plant. Farmers would have to keep accounts detailing where all their manure goes. Besides encouraging farmers to deliver their manure for processing, they could also be given an incentive to reduce the amount of surplus produced by refunding only part of the deposit if production rose above a certain level. However, the return on the deposit must be such that farmers still have an interest in delivering their manure for processing. In essence, a deposit-refund system of this kind is the same as a surplus charge based only on manure accounting; however, there are fewer enforcement problems. The deposit can be levied from manufacturers and importers, although extra measures would be needed to prevent 'parallel imports' of livestock feed [9].

[9] A possibility would be a system whereby tax is levied on the feed delivered to farms, with manufacturers and importers charging an advance tax. The fact that expenditure on undeclared imports cannot be claimed against income or corporation tax helps to prevent parallel imports.

It will be difficult to impose charges on feed which farmers produce themselves. However, these need not necessarily be regarded as a bad thing from the environmental point of view, since manure surpluses and overfertilisation mainly result from imported livestock feed.

A similar deposit-refund system could, of course, be used for artificial fertiliser. In that case, farmers receive a refund only if they limit the amount of fertiliser they apply to their land. The fact that artificial fertiliser is so inexpensive means that the deposit would have to be several times the price in order to be effective.

If deposits and surplus charges are high enough, the system outlined above can give cattle and intensive livestock farmers an incentive to stop their overuse of fertilisers and illegal dumping. Further agreements (in the form of covenants) with the individual subsectors can form a useful addition to the system.

Crop protection agents
Arable farming, bulb growing, fruit farming and hothouse cultivation are major contributors to the dispersal of crop protection agents in the environment. The classification method indicates that financial and/or private law instruments are suitable (see table 3.1). They also enable the problem to be tackled at the manufacturing or import stage, which can reduce enforcement problems.

However, EC regulations prevent the Netherlands from imposing a system of charges exclusively within its own borders. The problem of crop protection agents differs from that of artificial fertiliser and livestock feed in that crop protection agents are less bulky and can therefore be 'smuggled' across borders more easily. It would therefore be useless for the Netherlands to impose charges unilaterally. A system of charges would have more chance of success if it were introduced at European level. The Netherlands could exert a great deal of pressure on the EC to ensure that this happens. The progress made with the European phytopharmaceutical admission policy during the Dutch Presidency illustrates this fact. Such a system would, however, have to be combined with other instruments like those described if this progress were to continue.

3.4.2 Energy consumption

Chapter 1 concluded that the current policy on energy conservation is unlikely to achieve the government's objectives. The question of how the available instruments can best be deployed must therefore be addressed.

The classification method (see table 3.1) shows that all environmental problems linked to energy consumption (the greenhouse effect, acidification, exhaustion of energy supplies) fall into the second or fourth category, depending on the number of sources. Both types of situation are dominated by high costs or large cost differences, which makes financial instruments (governed by either public or private law) the most effective means of tackling the problems. In the case of energy consumption, large cost differences are the main feature. Some energy conservation measures save

money, while others are unfeasible given current energy prices (particularly investments in expensive equipment, good isolation, etc.). Social regulation (in the form of covenants and education campaigns) can be effective when it comes to bringing about changes in behaviour, particularly those changes which involve low costs only. Although they do lead to energy savings, these instruments will not encourage people to make large investments, particularly when there are a large number of sources. Technology policy can be used to lower these costs, however.

Which private law or financial instruments are most suitable depends on other situation characteristics. The large number of people involved means that liability is not a very suitable instrument. The fact that the effects of energy consumption (exhaustion of reserves, rising atmospheric CO_2 levels and acidification caused by SO_2 and NO_x emissions) occur over a great many years and affect future generations makes property rights (over energy sources or exploitation of the environment) less suitable for use as a control mechanism. Emissions linked to energy consumption can be controlled quite effectively using charges. However, the level at which charges are imposed should preferably correspond to the level at which the ecological and economic effects occur. Ecological effects occur at continental (acidification) and global (enhanced greenhouse effect, exhaustion of energy reserves) level. The economic effects differ from one sector to another, although some can affect international competition.

The best way of dealing with this problem would therefore be to introduce charges at global level. However, it is extremely doubtful whether a sufficient number of countries - including the oil-producing countries and the United States - would be prepared to cooperate on such a system in the near future. Thus, the question arises whether such a system would be effective at a lower level. This would depend on whether the economic effects (which include distortion of the market) could be neutralised. One way of doing this would be to feed back the charges into industry: if the revenue could be used to keep the costs per unit product or activity roughly stable, a system of charges might not present so many problems [10]. In 1991 the European Commission proposed that an energy tax be introduced, which would rise from $3 per barrel of oil equivalent in 1993 to $10 per barrel in the year 2000. Energy-intensive exports would be exempt from the tax. The amount of revenue fed back into the economy of each member state could be regulated on an individual basis. The southern member states have objected to this proposal on the grounds that it would place a disproportionately heavy burden on them.

Secondly, industries which are particularly sensitive to competition could be granted a full or partial exemption from the tax. According to a report by a steering group set up by the government to look into regulatory energy

[10] However, the aim would not be to fully compensate for the extra expenditure incurred by every company and every household. After all, this would remove the incentive to save energy, since a saving in energy would reduce the amount of compensation paid.

taxes [11], the adverse effects of a unilateral Dutch tax could be reduced by excluding major users and transport fuel from the system. This would mean that approximately half the energy consumed in the Netherlands would not be covered by the tax. Because the tax would only apply to the lowest levels of energy consumption (households and small companies), competition would not be affected very much. Although the saving in energy seems to be fairly low (5.5% saving by 2015 with a 100% tax), it is more than the current subsidy scheme is expected to yield (1.5% by 2015).

Chapter 4 looks more closely at how international agreement might be reached on this issue.

3.4.3 Households: waste disposal

Waste problems are especially serious in densily populated areas. This particularly applies to the Netherlands. Dutch waste policy aims primarily to reduce the volume of waste by means of prevention, separate waste collection and recycling, and the sound processing of unavoidable waste. The composition of the waste emanating from each household is difficult to measure and the number of sources is of course extremely high. To open and search all rubbish bags would be unfeasible, even on a sample basis. The possibilities for evasive action are never-ending: dumping it on someone else's doorstep or in the countryside are just two examples of how to get rid of unwanted waste. Forms of direct or financial regulation which are directed at waste itself are unsuitable. Public education campaigns have had some success with persuading people to separate their waste, since this apparently does not erode anyone's standard of living. In view of these situation characteristics, the problem of domestic waste separation can be classified as diffuse (type 6). The problem is difficult to measure and assess, but the low costs involved make social regulation (education campaigns) suitable.

The volume of household waste is also difficult to measure. However, it can be controlled successfully through inputs, i.e. the products which eventually end up as waste. In cases where reducing the volume of waste entails high costs, the problem can be regarded as heterogeneous (type 4). In such situations, financial and private law instruments are fairly suitable, if directed at products and/or packaging. Public education campaigns are not so effective in these high-cost situations.

It is also important that the waste which does arise is processed properly. An adequate processing system also lends credibility to calls for people to separate their waste. There are three ways of processing waste, listed here in order of preference: recycling, incineration and landfilling. However, there are a number of problems.

[11] Eindrapportage Stuurgroep Regulerende Energieheffingen: een onderzoek naar de effecten op energiebesparing en de economie ('Final Report of the Steering Group on Regulatory Energy Taxes: a study of the economic effects of energy conservation'); Ministry of Economic Affairs, The Hague, February 1992. An English summary is available at the Ministry of Economic Affairs.

1. The constantly changing conditions on the markets for waste substances make it difficult to set up a stable, profitable processing system. One example of an area with such problems is the recycled paper market, where prices have fallen dramatically over the past few years because more waste paper is being collected in other countries and imported in the Netherlands.
2. Government also faces problems with waste, particularly when it comes to siting new incinerators or landfills. Municipal councils often adopt a 'not in my backyard' (NIMBY) attitude. Such deadlocks are often only broken after long and arduous procedures.

The underlying cause of these problems is the fragmented and small-scale character of the waste processing system. There are also logistical problems. A solution is being sought in more consultation between municipal councils, provincial authorities, mainly on problems such as those outlined in point 2. Although consultations can be useful in certain cases, it is uncertain whether they can induce people to change their behaviour in a direction which is against their own interests (such as accepting a landfill site in the area). In many cases, more coercive instruments will have to be used. It seems inevitable that the powers of local authorities to oppose site proposals will eventually have to be curbed, for the sake of greater interests than those of the individual municipality. Government is currently drawing up a bill to this effect, known as the 'NIMBY bill'.

In some cases, problems cannot be tackled adequately even at national level. This applies, for instance, to the problem of paper recycling, where the situation in the Netherlands has been made more difficult by the successful collection policies of other countries. International coordination can help prevent this kind of problem. National policies are also unable to deal with cases where for waste to be processed efficiently, greater quantities are required than are produced in the Netherlands. This applies for instance to car batteries.
Waste processing can be improved by making manufacturers responsible for the entire life cycle (including the waste stage) of their products and packaging. A system of this type is currently being set up in Germany. The size and quality of waste streams can also be improved by imposing regulatory charges on environmentally unfriendly packaging, particularly non-reusable packaging for products for which reusable packaging is available, such as beer and soft drinks cans. However, this type of charge should not be used too often, so as to avoid enforcement problems. As we have already stated, social regulation is a relatively effective way of promoting waste separation. In cases where each individual package can be reused (as is the case with bottles), deposit-refund systems can provide an extra incentive for people to return packaging for reuse.

3.4.4 Households: private car use

Private car use contributes to a number of environmental problems. The road transport sector as a whole accounts for 14 per cent of energy consumption in the Netherlands, 10 per cent of the Dutch contribution to the greenhouse effect and 25 per cent of acidification. Private cars account for some 65 per cent of road traffic. The transport sector also exacerbates the waste problem and causes amongst other things noise and odour nuisance.

Vehicle emissions (e.g. CO_2, NO_x) are difficult to monitor on an individual basis, as is car use itself. However, the environmental effects of car use can be tackled in a number of different ways: through the fuel input, vehicle technology, road tolls, taxes, the infrastructure and parking policy. Many people suffer a considerable decline in their standard of living if they stop using their car, or use it less. The fact that people, especially those on lower incomes, spend a large proportion of their income on their cars indicates how important they are to them. The drop in the standard of living varies and depends on the reasons for car use.

Under our classification system, private car use is regarded as a heterogeneous problem (type 4), which in principle should be tackled with financial and private law instruments. The fact that traffic depends on the infrastructure is useful, since it allows the problem to be approached from this angle. For environmental policy to be effective, complementary instruments must be deployed which enhance the effect of the main instruments and engender public support.

It goes without saying that the car has brought many advantages to society. This is obvious from the increase in car ownership and the high priority it is accorded. However, while the advantages of the car are already reflected in pricing and market forces, and therefore require no promotion on the part of the government, the disadvantages are not. For economic goods and environmental resources to be allocated in the most effective way possible, the negative effects of car use must be reflected in prices. The disadvantages of car use affect the whole of society: we all pay in some way, but drivers pay no extra. What we are talking about here are the costs of road accidents, in so far as they are not covered by insurance, air pollution and the space occupied by the infrastructure. In 1988 these extra costs, which are not covered by the transport sector, amounted to some 4 to 6 billion guilders. This comes to between 6 and 9 cents for every kilometre driven. These figures exclude CO_2 emissions. Since the marginal costs are higher than the average costs, including the costs of these external effects in the price of car use would lead to a rise of at least 15 cents per kilometre. An accurate pricing policy can reduce unnecessary car use and encourage people to turn to alternatives such as telecommunications or less-polluting cars with lighter engines.

The policy on car use has so far focused on reducing the growth in the number of kilometres driven. To this end, attempts have been made to increase the variable costs of running a car. Since technological innovations are unlikely to enable the NEPP targets (see chapter 1) to be reached, this aspect of environmental policy has become extremely important. However, to date the policy has failed to curb this growth, which has been caused primarily by the growth in car ownership over the past thirty years. This failure has partly been due to the restrictions neighbouring countries have placed on the policy of increasing variable costs through fuel prices (and which have led to the phenomenon of 'cross-border fill-ups', where people drive to Belgium and Germany to buy petrol, which is cheaper there).

The rationale behind this variable costs policy is that, when confronted with low fixed costs and high variable costs, an individual will want and be able to own a car, but will use it sparingly. However, it is by no means clear whether the financial aspect is more important to the motorist than, say, travelling time, convenience and status. What is more, the scope for making costs variable is restricted by the cross-border fill-up phenomenon and by EC regulations on excise duty. There is therefore every reason to focus attention on the growth in *car ownership*, as well as *car use*.

In theory, fuel prices offer a good opening for environmental measures. Raising the price might encourage people to buy smaller and more efficient cars (perhaps also electric cars in the future), to use them less and to drive more economically (lower speeds, smoother starts). A recent survey has shown that the absolute value of the long-term price elasticity of fuel consumption is fairly high (0.8/1.0). This is mainly because people would buy more efficient cars and not because they would drive less. If fuel prices were to be raised at international level, manufacturers would most probably respond by developing even more efficient cars.

This elasticity means that for the Netherlands to achieve its CO_2 *target*, it would have to raise fuel prices by about 30 per cent (around 50 cents a litre or 3 to 4 cents per kilometre). However, the target for the reduction in *car use* will require a rise three to four times higher. The problem of cross-border fill-ups and EC agreements on excise duty limits restrict the potential for a national fuel pricing policy. The Council therefore considers it vital that the Netherlands use its influence within the EC to maximum effect to raise the upper and lower limit on excise duty. The best way of doing this is discussed in chapter 4.

A fuel pricing policy which attempts to internalise environmental costs focuses attention to existing situations which run counter to this aim. If the basic principle is to internalise environmental effects through a pricing policy, then implicit subsidies have to be abolished. For example, the tax allowance for commuters makes commuting cheaper. Since commuting determines the size of the infrastructure, it also accounts for a disproportionate percentage of investment and operating costs; this is not reflected in prices. If the tax allowance were to be abolished, the costs of commuting would rise by some 3 cents per kilometre.

Another set of costs which are not reflected in prices are the costs of road accidents. In the Netherlands, these are currently largely paid for by social insurance. This, too, is an implicit subsidy. Although this issue is not strictly environmental, the introduction of better liability systems might help to achieve environmental objectives. It would mean that personal liability insurance premiums would rise substantially, although by just how much is not yet clear.

One might also ask why public space is placed at the disposal of car drivers for parking without them having to pay individually for the privilege. Internalisation of these costs would probably also encourage people to use their cars more responsibly. One possibility would be to raise parking fees

in city centres, and to introduce fees for parking around the centre. However, higher fees would need stricter enforcement. The space used for parking can also be reduced by more effective planning. The fixed costs of running a car might be raised in order to reflect the costs of using space for parking. In a similar vein, car tax might be set at a level which benefits the environment and brings us nearer to achieving our environmental targets.

People might also be enticed out of their cars if public transport were to be improved. However, one must not expect too much of such a move: a 10 per cent increase in the number of kilometres covered by public transport leads to only a 1.5 per cent reduction in the number of kilometres driven. One must also bear in mind that public transport has an adverse effect on the environment, although not as great as that caused by cars. The environmental impacts of each passenger kilometre can also be reduced by using existing capacity more efficiently. Flexible working hours might help in this respect.

3.5 Conclusions

The situation characteristics method described in this chapter offers a systematic framework for choosing instruments in specific situations. The method includes a classification of environmental problems based on a number of essential characteristics, which can be used to speed up the procedure for assessing whether instruments are suitable in particular situations. The method is based exclusively on rational reasoning. The ultimate choice of instruments will depend not only on rational considerations but also on political preferences.

Applying the classification system to a number of environmental problems shows that financial instruments and regulations governed by private law are suitable for tackling a great number of environmental problems. However, current environmental policy relies largely on direct regulation. The enforcement problems which often arise with direct and financial regulation can often be reduced by targeting financial instruments differently. Regulations governed by private law go a step further by placing the burden of enforcement on the actors themselves. Financial regulation can be well-targeted, while private law provides a broad base through which sustainability can be integrated into society. However, the broader application of private law takes responsibility for realising the objectives out of the government's hands and places it in the hands of others.

The situation characteristics method has been explored in more detail in relation to four specific areas of environmental policy. Some of the conclusions reached are listed below.

- *Regulatory energy taxes* are a fairly suitable way of curbing greenhouse gas emissions, energy consumption and some acidifying emissions. The potentially adverse effects on the competitive position of companies could be averted by granting some exemptions from the tax.
- The manure problem in the cattle farming and intensive livestock farming sectors can be tackled by means of a *combined system of deposits and*

surplus charges. Charges might also help to curb the overuse of crop protection agents, if only they are imposed at European level.

- *Social regulation* can encourage people to separate their household waste. It should be used in combination with financial and private law instruments to reduce the volume of waste produced. To preserve the credibility of environmental policy, waste processing must be better organised.
- The best way of curbing the growth in vehicle emissions is to raise *fuel prices* (possibly through energy taxes). Implicit subsidies, such as the tax allowance for commuters, the failure to charge motorists for the space they use (e.g. for parking in inner cities) and the inadequate compensation rights for people injured in road accidents, should cease to exist.

On the substance of environmental policy 4

4.1 Introduction

Government policy has hitherto been presumed to have an objective rationality which serves as the starting point for modelling public response and behaviour. In modifying or restricting behavioural parameters or in influencing public behaviour, inter alia by means of social regulation, government is acting out of democratic conviction and on the basis of a clear understanding of environmental problems. With this model, it is not obstructed by a lack of information (or by the cost of providing information); it knows what it may do, what it has to do, what it wants to do, and it acts accordingly.

In the previous chapters the public, i.e. individuals and industry, has been allowed more freedom in the way it reacts to government policy. It is presumed to act in a way that is *subjectively* rational, which leaves room for force of habit, 'satisficing behaviour', wishful thinking, perception problems and the need for self-attachment, in short for everything which sociology and psychology have contributed to the theory of consumer and producer behaviour. The subjective approach enables a looser interpretation of rationality, namely that people (more or less) deliberately systematise their preferences (categorise their needs) and base their behaviour as a rule (but not always) on their needs and values, whatever these imply. This gives rise to the assumption that there is a consistency in human behaviour which, when combined with the law of large numbers, provides a degree of predictability as regards changes in the parameters used in determining behavioural choice (and the reactions to those changes), and thereby provides a basis for policy analysis.

The fact that it is not only *reactions* to changing parameters in subjective rationality which occur but also changes in those parameters themselves is acknowledged in this chapter. After all, 'the government' is no stranger to the infinite variety of human nature; it has a pluriformity in which great differences of style, culture and behaviour are to be found even at a single administrative level. Government authorities, too, act in a subjectively rational way when they change or limit parameters (direct, financial or private law regulation) or influence preferences (social regulation). Environmental policy, like any other policy, is ultimately the product of the interaction of the subjective rationality of the government and the public in determining what is *permissible* (rights), what is *obligatory* (duties) and what is *desirable* (preferences/legitimacy). But the need to encourage individuals to limit the degree to which they themselves cause undesirable external effects applies more to environmental policy than to any other.

Rights, duties, legitimacy and government behaviour

Democracies derive their legitimacy and their continuity from their ability to attune their policies to what their grass-roots supporters, the people, demand or will accept in terms of rights and duties. In so doing they

resemble entrepreneurs in that they endeavour to influence the preferences of their supporters (customers) by means of information, transaction, authority and power. The people for their part have certain perceptions as regards their rights and duties and certain expectations of what government can do for them. According to conventional political theory, this should be apparent from attitudes regarding tasks which the public wishes to assign to a government authority when it comes to protecting their interests and taking action when conflicts of interest manifest themselves.

In practice, the balance between supply and demand in government policy is seriously threatened if the government and the public both act in a subjectively rational way by concealing preferences so as to demand rights and evade obligations. In such cases, the modern theory of collective decision-making can provide a detailed explanation of how and why government policy seems doomed to failure.

This chapter takes a different route. The risks of following a strategic line, and of decision-making procedures becoming deadlocked, are acknowledged in section 4.2, but so, too, is the scope for breaking out of this kind of unproductive behaviour. The essential thing is to reach a regulatory level which, given the scale on which environmental problems occur, must be maintained in order to achieve objectives which have been democratically established and which are socially acceptable. This analysis forms a basis for dividing responsibilities between the various administrative tiers on the one hand and between government authorities and private organisations or the market sector on the other. The extent to which it is possible, and necessary, to have policy perspectives which indicate priorities is looked at subsequently in section 4.3; section 4.4 deals with how the questions posed in the Dutch government's request for this report can be answered.

4.2 Policy agenda and questions of scale

According to the scale on which environmental problems occur, the Dutch National Environmental Policy Plan (NEPP) distinguishes global, continental, fluvial, regional and local problems. As mentioned in chapter 3, ecology and economic impact both play a part when it comes to formulating the optimum administrative regulatory level (jurisdiction) for attaining environmental objectives. Environmental problems frequently cut across existing administrative tiers. If the problems transcend the scope for taking action at national level, further coordinatory measures at international level are called for. For a small country such as the Netherlands, which acknowledges environmental national problems to be a vital national interest, targeted diplomatic efforts are required in order to be able to achieve the environmental objectives that have been set. This kind of *environmental diplomacy* calls for a campaign of transaction and persuasion, which may or may not culminate in conventions and regulations, in order to ensure that others take account of Dutch interests. The Council points emphatically to the need to give consideration to the international dimension of environmental policy, not only as a limiting factor but especially because it offers the opportunity for moving the boundaries, literally and metaphorically. In this regard the *transactional character* of

environmental diplomacy merits close attention. Debt-for-nature swaps with the Third World are one example that should be followed in other areas. Fairly substantial environmental benefits can be obtained by Western Europe as a *quid pro quo* for funding structural reforms in Central and Eastern Europe if this is made a main issue of environmental diplomacy. A similar approach can also be applied in relation to Southern Europe in the context of cohesion.

Determination of the policy agenda involves asking two main questions: *how* are priorities set with regard to objectives and areas of attention, and *what* do these objectives and areas of attention entail? (How broadly do we view the connections between the two?) The order of precedence of items on the policy agenda - which has to do with *how* priorities are set - depends on the interaction between national and international processes of consciousness-raising on the one hand and the degree of political enterprise on the other: politicians respond, with varying degrees of urgency, to what engages society's interest. Once they have decided to 'tackle' an issue, they take the lead in determining what the problems are. They then try to attract support for their policies by taking steps to ensure that the consciousness of the public is raised even further. If the politicians neglect an issue or deal with it disappointingly, public interest may wane. This does not mean, however, that the problem has disappeared. On the contrary, if the political agenda is inadequately determined, socio-political encounters will in the long run frequently recur. The interaction between consciousness-raising, political response and public response is highly recognisable, particularly in the area of environmental policy.

In addition, for an environmental policy to be successful, much depends on the objectives and the areas on which attention is to be focused, i.e. on what we *want* to do and in what context, being properly defined. It is clear that confidence in policy will be damaged if the objectives formulated are unrealistic. The degree to which objectives make it possible for the area on which attention is to be focused to be satisfactorily defined also needs to be underlined. In policy on vehicle use, for example, it is not only the physical restrictions on such use (e.g. traffic jams, parking restrictions), the system of fiscal or parafiscal public charges and exemptions, rules regarding liability (is the right of recovery effected by private health insurers or by the health insurance funds?) and social regulation (information campaigns) which play a role in car use. The range of alternatives offered to the car user, ranging from staggered working hours to public transport and cycle facilities, also plays a role. Conversely, when evaluating the desirability of a high-speed train network as an alternative form of public transport, account has to be taken of factors such as the adverse effects on the natural environment and the landscape in the Green Heart of Randstad Holland and the substitute elasticities of flying and car use if policy remains unchanged, and of aspects such as (changes in) physical planning policy (the planning of road, air route and airfield/airport capacity) and all other policy measures which may affect mobility and the groups which come into this category.

More generally, an analysis of the overall 'system' reveals the full breadth of 'blanket' policy agendas by showing the interaction between policy areas. It

is not an instrument of environmental policy if medical expenses are recovered from a car driver who has caused personal damage. However, through the third party insurance premium, this measure will have a considerable effect on fixed car costs, and thereby on the number of cars owned. The latter is an important factor in determining car use and the environmental effects involved. On the other hand, the current restriction on risk liability promotes environmental degradation since it covertly subsidises car ownership. Such links between different markets can also be detected in the side effects produced by the combination of a high real interest on stock control of 'just-in-time' deliveries with untaxed kerosene prices. These lead to high energy consumption in air freight. A macroeconomic policy aimed at achieving lower interest rates and a uniform rate of taxation that is internationally coordinated, will produce a new policy on stocks and impose less of a burden on the environment. An analysis of the links between policy areas can make clear how the link with side effects can make an environmental policy more effective. It can also show how an environmental policy which neglects these side effects can lose its legitimacy.

Jurisdiction as a limiting factor

It has already been seen that environmental problems may be of a cross-border character. Futhermore, measures may have economic consequences. These facts play an important role in determining the political agenda; does the existing division of jurisdictional powers provide sufficient scope for instruments to be deployed with maximum effect?

In the first place, the Council regards the solution of environmental problems as ultimately the responsibility of the government, since the interests of the general public (environmental values) are usually not taken into account by market forces. The identification and protection of such interests is the core task of the government. On the other hand, the Council has also concluded that the government risks becoming overburdened by the weight of the wide-ranging functions assigned to it. *It is therefore vital that environmental policy be directed towards the incorporation of environmental values into market behaviour.* This enables the government to restrict its involvement to maintaining the agencies which guarantee this policy aim. As for the rest, forms of centralisation and decentralisation must be sought which minimise the amount government as a whole spends on information, transaction and management. However, this is not to say that there should not be an authority competent to act at a level dictated by environmental problems and by the scale of the economic consequences of environmental policy, even though implementation is generally left to other actors. The only possibility which remains if the jurisdiction is invested in an authority at too low a level is a 'next-best' use of instrument.

The quest for the ideal jurisdiction, as it were, and the optimum use of available instruments proceeds on the one hand via the minimalisation of information, transaction and management costs and via the norms of good government on the other. Theoretically, (territorial) administrative units are arranged in such a way as to ensure that transaction and information costs are minimalised *at the lowest possible administrative level compatible with the*

attendant cross-border interests. This is the principle of decentralisation which underlies the traditional division of tasks between the various administrative tiers (the municipality, the province, central government and the EC). Sometimes, this traditional administrative structure is inappropriate when it comes to dealing with certain problems. In the Netherlands this is examplified by the case of the district water boards, which long ago acquired their own functionally limited powers within an area that was primarily geographical (the watercourse). This type of arrangement is worth considering in the case of environmental issues which are to a great extent regionally determined and where the minimisation of information, transaction and management costs requires that the parties involved regulate their own affairs where possible. For example, responsibility for the purification of surface water is entrusted to the water treatment boards (and in some cases to the district water boards). By the same token, the problem of manure could conceivably be handed over to public bodies to be set up for that purpose. This kind of functional decentralisation gives rise to a principal/agent relationship in which both the principal(s) (the Ministry of Agriculture, Nature Management and Fisheries and the Ministry of Housing, Physical Planning and Environment) and the agent (the 'manure board', as it were), are government authorities, although central government has delegated responsibility for implementation and enforcement.

The optimum administrative level must be found if environmental policy is to be efficient, effective and legitimate. Accordingly, the Council urgently points to the danger of inertia when it comes to adapting that level to changed circumstances. New insights into the scale on which environmental problems occur and the risk of the problem being 'passed on' (for example by seeking out the municipality which applies the Nuisance Act in the most flexible way) may well necessitate a greater 'scaling up' of local environmental policy than has hitherto been considered acceptable. Internationally, a further move in this direction may meet with political problems and obstruct the development of a decisive environmental policy. The injection of dynamism into international policy is therefore dealt with specifically below in section 4.3.

4.3 Policy perspectives - thinking in dynamic terms

As chapter 1 showed, a number of the objectives set forth in the NEPP and the NEPP-Plus will, not surprisingly, prove unattainable. Activities that are significant causes of pollution, e.g. CO_2 and vehicle use, will be greater than expected, partly as a result of economic trends. The regulatory system which currently exists, and which by and large takes a direct form, is heavily overloaded. Furthermore, there is a general lack of understanding of the technical aspects of ecology and the behavioural relationships which need to be known before ends and means can be credibly specified. A great deal of research and a deliberate policy of experimentation is required in order to be more certain about the behavioural relationships in question. This applies particularly as regards the newer range of policy instruments, which are of a financial, private law and social character. As previously stated, there is also the fact that a country which is small in geographic and

ecological terms and in the middle range in economic terms has little room for manoeuvre in determining its own environmental policy and is strongly dependent on other countries. Recent history has again shown that the international scene can change radically and that it is difficult to predict what will happen, even in the medium term, either economically or as regards the scope for political and administrative cooperation. A few years ago no-one expected that an international ban on CFCs could be achieved within such a short space of time, or the onset of a climate favourable to a policy on energy and nuclear safety which would also encompass Eastern Europe. Thus the fact that the ends and means specified in the NEPP-Plus are incomplete and, more generally, that no itemisation of ends and means *can ever be complete* virtually speaks for itself.

In chapters 2 and 3, light was shed on the potential strength of the environmental instruments available. Particular attention was focused on the newer instruments. The assumption was that people behaved with subjective rationality within a political system that acted according to rational objectivity, in which the government almost automatically did 'the right thing'. It is now time to cast a critical eye over this hypothesis. On examination, it is not only the actions of the people (who 'demand' policy) which are determined on the basis of subjective rationality. So too is the behaviour of policy-makers and politicians (the policy 'suppliers'). This subjectivity is reflected in the *style of government*, i.e. the way in which government authorities *de facto* deal with the strategic variables and administrative limiting factors. Administrators face constant pressure from what happens to be the craze of the moment; both the policy supply and the policy demand side let themselves get worked up by incomplete information (such as the recent NASA study relating to the hole in the ozone layer). Incomplete information has the effect of distorting the ability to perceive problems properly (how important is it for the Eastern Scheldt to be open?). In addition, it tempts politicians to indulge in symbolism when determining the agenda, a symbolism which does not get to the heart of the problem of sustainability (for example, the Queen's Commissioner travels by bicycle instead of by car, when there is smog).

The Council is satisfied to note that the Netherlands is a front-runner when it comes to building up a knowhow infrastructure for tackling environmental problems. It thus fulfils a precondition for rationalising ecological boundaries and the scope of environmental policy, as well as the cost-effectiveness of putting the policy into practice. This precondition is, however, inadequate, since, given the subjective character of the actual decision-making process, there remains the question of whether the political culture can fulfil the requirement of durability which sustainable development imposes on policy, or, to be less dramatic about it, which determines the vigorousness of that culture, and whether, in a democracy, anything can be done about it. Can the apparent constants within the decision-making structure be changed? What determines whether or not substance can be substituted for symbolism? What determines the durability with which a particular policy can be implemented? How should environmental diplomacy be pursued in order to shift the policy boundaries, both literally and metaphorically?

While answers to questions of this kind rarely lend themselves to verification that is refutable according to the norms of the philosophy of science, an elucidatory paradigm can serve to rationalise them. For this purpose two premisses have been selected: (1) Hirschman's explanation of the dynamics of challenges [12] and (2) the hypothesis that the dynamics constituted by the response to those challenges is a strategic variable which can be influenced to a greater or lesser extent according to changing but nevertheless recognisable circumstances. It is against this background that the Council, acting on assumptions - gradually widened - about the (changeability of the) international environment within which Dutch environmental policy is pursued, has come up with three policy perspectives: (1) a *national perspective*, (2) a *European perspective* and (3) a *global perspective*.

These perspectives need to be seen as 'overlapping stylisations'. Policy can be directed towards making them run over into one another. In the opinion of the Council, this is indicative of one of the main strategic possibilities of environmental policy, given that the trend towards 'scaling up', both nationally and internationally, has already been identified as increasingly decisive in determining whether environmental policy is effective. In the order of policy perspectives outlined above, cooperation within and between existing political and trading blocs increases, thereby drastically reducing the dangers of a decline in competitiveness and an undesired shift of industrial activity [13]. Both the technological potential and the authority to pursue an active environmental policy increase in inverse proportion, thus making those who are directly involved less reserved. For example, with the final, i.e. the global, perspective, the introduction of a general energy tax to reduce (wasteful) consumption is an accepted instrument. At national level (the first perspective), the scope for accelerating policy measures to deal at the outset with environmental problems which transcend national frontiers is limited.

In the *national perspective*, the Netherlands will have 'to wait and see'; there is no 'cooperation' from other countries in resolving Dutch environmental problems. What this policy perspective boils down to is that cooperation at European and global level is less than adequate. This restricts the possibilities policy-wise to what the country can do on its own and by virtue of its own authority. Under such circumstances the emphasis lies on national life-cycle management, agriculture and safety ('no regret' policies). In view of the risks as far as competitiveness is concerned, the scope for energy policy remains confined largely to a regulatory charge in the form of a small consumer variant which has to leave motor fuels untouched because of economic repercussions, e.g. cross-border fill-up. This raises problems in

[12] A.O. Hirschman, Shifting involvements; Princeton University Press, 1982.

[13] Displacement is 'undesired' if environmental problems do not, on balance, come closer to being solved, or if the solution, when seen from the perspective of the country from which economic activity is shifting, results in an unduly large number of sacrifices. In itself, a gradual shift of, for example, the aluminium industry, to countries with a surplus of hydro-electric power can lead to a more sustainable development, which is desired.

that exemptions for cars and large-scale consumers (via the same small fixed threshold as small consumers) make it unfair. This will have to be balanced, however, against the desirability of restricting undesired travel. The problem posed by the discrepancy between the small and large-scale consumer can in theory be countered by introducing an alternative kind of tax from which 'unavoidable' consumption is exempt. With this system, there would be a tax-free threshold for the small consumer, with the allowance for large-scale consumers determined on a case-by-case basis in a procedure which might be incorporated in a voluntary agreement policy. A tax-exempt 'unavoidable' use allowance reinforces the regulatory effect of the tax and thus its environmental effectiveness in two ways. Firstly, the fact that the tax base is narrowed, while the revenue is returned, allows a much higher tax percentage; secondly, the tax is only levied *marginally* (on the most elastic part of demand). This encourages changes in behaviour. Looked at thus, the *size* of the exemption will be determined by factors such as competitiveness and the risk of an undesired shift of economic activity to other countries. It will therefore move upwards as policy is scaled up to European and global levels. In view of these policy benefits, the Council suggests that consideration be given to replacing the consumption tax on fossil fuels as envisaged under the Netherlands' Environmental Protection (General Provisions) Act. An alternative would be the kind of regulatory charge referred to above. This would enable policy to avoid a 'double' energy tax and focus on a tax instrument which, in addition to being more effective, may well find greater social acceptance both nationally and internationally.

As far as policy on vehicle use is concerned, there is every reason for supplementary national measures, and not only on grounds of fairness. This is a factor which does more than contribute to continental and global environmental problems. It also contributes to problems that are closer to home, problems of a regional and local nature, e.g. waste, the amount of space taken up and odour and noise nuisance. These problems have grown to an alarming extent in a densely populated country like the Netherlands. In the national perspective the scope for solving the problems is restricted: solutions are of a 'next-best' nature. In order to preserve international competitiveness, priority will have to be given to measures aimed at individuals ('non-tradeables'). Given this constraint, differentiated price measures, abolition of the tax allowance for commuters, an increase in motor vehicle tax and active measures to implement the right of recovery via third-party insurance can all play an important role, as shown in chapter 3. The need for mobility in a modern society cannot be denied. However, mobility need not always be of the *physical* kind. The potential offered by telecommunication is still far from being exploited to the full. Even when physical mobility *is* necessary, there is great scope in the Netherlands for communal transport, be it public or private, precisely because the country is densely populated.

Taking the national perspective, environmental policy is restricted to creating the scope for social acceptance of what is possible on a national scale and to creating awareness of the economic dangers posed by unilateral measures which may result in a displacement of economic activity from the

Netherlands to other countries. The consequence of adopting this policy perspective is that environmental policy can be only partially successful, a fact which underlines the need for administrative scaling-up.

The *European perspective* leads to a common environmental policy, albeit within a particular territorial framework (EC, EFTA/EEA, Eastern Europe and the CIS). This perspective is still of a pessimistic nature - failure of the Uruguay Round, with the European Economic Area developing into a trading bloc that is mercantilist and slightly *dirigiste*, possibly with the beginnings of an activist energy policy (European Energy Charter) aimed at reducing energy dependence on third parties, and with Eastern Europe and the CIS becoming politically bound to the West. In such a perspective, a tax on motor fuels is conceivable, technical requirements may be imposed on cars, and less displacement of economic activity enlarges the policy scope in the area of energy and vehicle use. The possibility of a *general* tax on energy as an industrial input, however, depends heavily on flanking world trade and energy policies and on the prospects for European environmental diplomacy.

The attainment of a European perspective in turn creates leverage for moving to a more optimistic *global* perspective. In this third perspective, the extended Uruguay Round succeeds, further substance is given to the European Energy Charter and scope is created for a global energy and environment policy pursued within a framework of active environmental diplomacy and free trade that is geared to the creation of prosperity. Such conditions would make it possible for the NEPP-Plus to be implemented. The competitiveness of industries vis-a-vis one another would be guaranteed by the fact that not only the United States but also Japan and the NICs (newly industrialised countries) would be involved in a cooperative effort. The danger of economic activity being displaced would be averted. The global perspective would also create the conditions in which not only environmental problems but also major ecological issues (such as the disappearance of the tropical rainforests, desertification, threatened species) can be discussed with a greater likelihood of success.

The endogenous and exogenous dynamics of strategic choices

In politics, successes and setbacks have a tendency to become stronger as time passes. The history of European integration is an obvious example. Set in motion in order to answer the challenge posed by the dollar shortage - which was at that time seen as structural - and the Cold War, the initial successes of integration achieved in the 1950s created a climate of widespread readiness to do business with one another. The turnabout came as a result of the shifting involvements that took place towards the end of the 1960s, which were reflected in the events of May 1968 and the decline of 'the American challenge'. The process of European integration gradually stagnated, until a response to the Japanese challenge came in the form of an exogenous initiative by entrepreneurs, heralding possibly a new period of success.

Challenges, and the responses to them, have a momentum of their own. The great challenges of our age - growth, income distribution, security,

international cooperation and the environment - fight with varying degrees of success to win priority when the political agenda is determined. The swings and turns to which intellectual preoccupations are subject are in part endogenously determined: growth and income distribution are captive to one another as power structures change and high ideals and activist notions about moulding the ideal society give way to disappointment and social isolationism. Under a political system which provides for the constitutional separation of powers, civil servants, (other) interest groups and advisory bodies, awareness, action, frustration, consultation and pacification are established elements of the policy cycle.

The success and the perseverance of an environmental policy depend heavily on the lessons which the protagonists in the decision-making process manage to learn from the policy-cycle stereotype described above. Success is not automatically self-perpetuating; it has to be kept going. If the challenge posed by environmental problems is to continue to appeal to the imagination, awareness needs to be followed by substantive or identifiable action; tokenism is self-defeating. Within the constraints of good government an environmental policy must be developed which can deliver what it promises, in terms of scale, functional powers, technological scope, facilities and legitimacy. To this end, government must find room to break through the vicious circle of conflicting interests which put policy in jeopardy.

From the strategic point of view, the decisive question is whether the dynamism of the response to ever changing challenges is exclusively endogenous in origin or whether it is open to exogenous influence. The determining factor to a significant extent is the nature of the challenge. If policy has a purely domestic focus, the scope is limited, in which case imagination is hardly likely to provide inspiration for the legitimacy of policy. Thus, as regards the *national perspective*, the most important task is to generate a dynamism in the direction of a more sustainable development. In the opinion of the Council, this means that there is all the more reason to take strenuous measures to tackle matters which can be dealt with at the national level (e.g. squandering, waste processing, eutrophication, acidification and private vehicle use), even though the scope for doing so is limited. It is precisely because waste, acidification and eutrophication require adequate support at the European level for national problems of regulation and compensation that the government policy which has been set into motion recognises national responsibilities. At the same time, the government stresses the fact that efficiency and effectiveness of policy can be enhanced by Community coordination. What is often required is a combination of instruments - in which one plays a pivotal role - which proceeds to exert somewhat of a synergic force. The typology described in chapter 3 identifies what kind of instrument is to be pivotal. The Council is in favour of applying the typology that has been developed in new policy cases and when evaluating existing environmental policy, although it acknowledges that the national perspective must often be less than ideal.

From the dynamic point of view, the principal function of the national policy perspective is that it explores the limits - and thereby implicitly the

scope - for progressing to the second level, i.e. the *European perspective*, via an active environmental diplomacy. As far as the articulation of policy is concerned, the focal point now shifts to the EC (whether there is scope for implementation at local level is another matter). The unknown can exert a kind of compulsive attraction. The threat of being ordered about by Brussels contrasts with the appeal of an authority with greater scope, which is more able to guarantee that environmental policy will be effective and that national competitiveness will be preserved.

The Council takes the view that the pursuance of environmental policy on a Europe-wide scale - which allows room for implementation at local, regional and fluvial level - can be brought within reach by an active environmental diplomacy. It is vital for the European perspective to extend further than the EC and the associated EFTA countries. Although the ecological problems which confront Eastern Europe are considerable, they also offer more scope for a Community approach than in the past. Furthermore, public awareness, notably in the Schengen countries, now means that such an approach would have greater validity than it used to have for many years. The Commission plays an active role, and much can be done at European level to improve the situation as regards the use of energy, which is one the most significant environmentally damaging activities in the world. Limiting condition is, however, that an explicit trade-off between economic values and economic interests remains necessary. While energy consumption in the EC is less than in the United States (2.5 as against 5.4 t.o.e. per head), it is many times more than the global average (<0.5 t.o.e. per head). Technological improvement (attained either through encouragement or imposed by force via government policy) and changes in behaviour (see the various instruments of government policy) can serve to initiate a break with the past. This requires an all-out effort on the part of the government.

As far as the European perspective is concerned, the most important aspect of policy at this level is, in the opinion of the Council, again the fact that it provides a basis for moving on to the *third policy perspective*. Even if European assumptions are correct and the Uruguay Round fails initially, Europe as it is now constituted forms a domestic market of such geographic, ecological and economic proportions as to enable environmental policy to develop favourably. This might even lead to cooperative strategies with, for example, Japan and the up and coming Dynamic Asian Economies (the Asian Tigers). Such a development would contribute quite substantially to improving the environment and to achieving environmental objectives. Looked at from a somewhat more mercantellistic viewpoint, an integrated Europe, as the major trading bloc, may in the long run have a leadership role somehow thrust upon it (a role it even might not desire). In the oligopoly produced by the formation of such a trading bloc, a situation could arise in which Asian and American producers adopt European environmental standards, particularly if they are coordinated with Japan & Co. This is more likely than a situation in which Europe's scope for setting norms is limited for reasons of competition. An active European environmental diplomacy aimed at the harmonisation of international environmental policy can contribute to a more gradual liberalisation and

facilitate the transition to the third and last strategic policy perspective, which is based on global cooperation. In this global perspective, GATT is revitalised, environment and growth harmonise fairly smoothly, and success is constantly followed by success.

The Council would emphasise that the sequences of events outlined above are intended only to give an impression of how policy perspectives can be made more dynamic, the ultimate goal being to coordinate national, European or global environmental policy in the manner that best befits the transfrontier nature of the problem. The perspectives are not presented as detailed scenarios. The point is to recognise that determined action can cause these three perspectives to run over into one another, with the danger of economic displacement yielding gradually as policy is scaled up *pari passu*. With these perspectives, governments and transnational companies are seen as active players whose creativity can help to shape the future. This is not the case with alternative scenarios which are usually more self-contained. The dynamic of the response to this challenge is in turn shaped by changing uncertainties, but there is considerable scope for purposefully shifting the boundaries of environmental policy.

Unless a more dynamic approach is taken, the danger that the policies of individual countries will retain a national focus remains. The fact that the discussion concerning regulatory energy taxes recently reached an impasse testifies to this. The Netherlands is solving some of its waste and manure problems, the United Kingdom is cleaning up its rivers and Germany is replacing polluting industries in what was formerly East Germany. No measures to deal with problems on a continental or global scale have so far been taken for fear that this will harm national competitiveness; there is a paralysing series of 'prisoners' dilemmas' in which policy is lacking. Environmental diplomacy, the tool which could force a way out of the stalemate, calls for national interests to be clearly articulated prior to the opening bid being formulated and the necessary dues being paid to get talks going.

For the Netherlands, the environment is a vital national interest. The environmental awareness of the people means that it is also perceived as such. Experience of matters such as the carburettor teaches us that making a modest opening bid which does not put a nation in too vulnerable a position is a safe approach if there are grounds for expecting that this will encourage others to follow suit.

As regards the introduction into environmental policy of regulatory charges, there is one option which is both interesting and which has great policy potential. When it comes to globalisation, the desired ultimate goal, a good beginning at European level is half the battle. The vital thing is, however, to get the EC as a whole to go along. Regional coordination can provide the impetus. Dutch diplomatic efforts must be geared towards arousing interest in neighbouring countries in the introduction of taxes on marginal consumption (section 3.4.3), with a tax-free allowance for 'unavoidable' consumption. This would make the international displacement of economic activity more manageable. One argument in favour is that, since energy

prices are virtually certain to rise substantially, timely adjustment will result in a headstart as far as competitiveness is concerned. If the countries of Northern Europe reach agreement on this point, they can collectively exert pressure on Southern and Eastern Europe to cooperate in a Europe-wide energy policy. One way of doing so would be to make financial transfers within Europe dependent on such a cooperation.

The Council's intention in providing this analysis is to indicate that environmental policy is not simply a question of ends and means. Whether the objectives discussed in chapter 1 - a responsible environmental approach - are achieved is determined not only by the choice of instruments, the intensity with which they are used and the availability of the alternatives and sanctions discussed in previous chapters. Determined measures aimed at achieving the ideal jurisdictional scope within which policy can be developed and patterns of production and consumption adapted without harming growth and employment are also important.

4.4 A closer look at the request

The Dutch Government has requested the Council to publish a report in two stages. This report, which deals with the first stage, shows that the strict separation of objectives and instruments leads to analyses and conclusions which are unsatisfactory. Further elaboration of the concept of sustainable development, which would also have meant raising the objectives of environmental policy, would have produced a fuller and more balanced report. We shall return to this point in the second stage of the report. Nevertheless, the Council believes that the report indicates how the objectives laid down can be achieved sooner, more efficiently and more effectively and can acquire greater legitimacy than is the case with the instruments currently applied.

In describing the characteristic features of environmental policy as a distinct kind of government policy, it is made clear why the environment as a public good requires a policy in which individual interests are sacrificed to the collective interests of a future generation. The scope for pursuing this policy is described in chapter 2, and particular attention is focused on more unusual instruments such as those of a financial nature and those that belong to the domain of private law and social regulation.

The reason for this attention is that the environmental objectives which the Dutch government has set with the NEPP, the NEPP-Plus and other policy documents call for far-reaching changes in the attitudes of institutions and individuals. The instruments which the government traditionally uses to prescribe or prohibit certain conduct are inadequate when it comes to effecting the changes that are envisaged. As a result, organisations and individuals are increasingly confronted with a profusion of rules, procedures and permits. The fact that the government plays a pivotal role with regard to current environmental legislation leads to an uncontrolled proliferation of its tasks and responsibilities. As a result, enforcement of environmental policy, which falls seriously short as it is, makes it impossible for government to sustain any further increase in its responsibilities.

A durable environmental policy requires structures and mechanisms which enable society to move in the direction of accepted environmental objectives with a minimum of government intervention. Moreover, legislation will in the long run have to be adapted accordingly. However, environmental problems by their nature require that the government has to continue its driving role when it comes to finding solutions. After all, given the discrepancy between de facto availability of environmental values such as consumables and raw materials in production and consumption (because the price is too low or non-existent) and the requirements to be laid down in view of the objectives set, decisions concerning the limits to be imposed on the nature and scope of economic development will nearly always have to be taken collectively. Government will therefore also play an important role in enforcing those limits and in deciding how the agreed scope for individual activities is to be allocated. However, the fact that the government performs this function in achieving environmental objectives does not mean that it can be the sole driving force behind environmental policy. Nor does it imply that the government ought to carry out the policy entirely on its own.

Questions about the choice of policy instruments need to be viewed against this background. Looked at in the context of a more general policy of deregulation, with government involvement restricted to core functions, the aim should be to reduce the burden on the environment without government having to play a pivotal role. Its responsibility should extend solely to laying down general rules. However, problems may arise which society cannot satisfactorily resolve whether or not there are general rules it can hold on to. In these cases, government may interfere. Thus, government should be regarded as a strategic reserve. This reappraisal of the role of government produces an argument in favour of greater significance being given to instruments aimed at transaction and persuasion. The Council believes that greater emphasis on social and private law instruments can reduce the environmental burden, in the sense that they allow 'unnecessary' (avoidable) use to be reduced. This approach obviously assigns an active role to groups that are concerned about what happens to the environment. Strictly speaking, environmental policy can then focus more on what given technological progress and the levels of production and consumption, constitutes unavoidable use. Public law regulation will remain essential to ensure optimum allocation of effort when it comes to improving the state of the environment. However, financial instruments (taxes or tradeable permits) can limit government's role to setting the framework within which economic operators continue to take responsibility themselves. This does not eliminate the need for direct regulation. Such instruments will always have to be deployed in the case of activities which seriously affect health or which seriously endanger human beings and the environment. In order to determine in specific cases what instruments should be used for what problems, the Council developed the situation characteristics method (see chapter 3).

If instruments of direct regulation are more widely deployed, environmental policy can become more efficient and effective and thereby acquire greater legitimacy. The vital thing is to deploy the instruments at a level and on a

scale that is appropriate given the geographic scale of the environmental problem and its economic effects. If this is not possible, the solution will be less than ideal and may be accompanied by considerable economic consequences. It is crucial on both environmental and economic grounds for a country with an open economy, and this applies particularly to the Netherlands, to work towards ensuring that the right jurisdictional level is reached.

However, the aim of deploying instruments at the right level conflicts with the objectives of government policy, since these are formulated at national level. In setting timetables for having reduced emissions by the year 2000, scant consideration has been given to the aforementioned ecological and economic factors. While this only serves to underline the importance of diplomatic efforts to achieve international coordination, it also makes it clear that some objectives will remain out of reach if diplomacy does not produce results.

In bringing this report to a close, the Council is disinclined to conceal the fact that Dutch policy can evoke major tensions if the right level of implementation is not attained or if the efficiency and effectiveness of the instruments used or the degree to which they find public acceptance have been misjudged. These tensions may arise since Dutch policy involves objectives being formulated in a planning process that is conducted in a top-down fashion prior to the optimum instruments being selected. Thus, in preparing subsequent national environmental policy plans, it is advisable to focus more on the scope afforded by an approach whereby agreement is reached on the instruments to be used and a wait-and-see attitude is adopted for a pre-determined period of time, particularly when there is great uncertainty about the effectiveness of the instruments under consideration. This would also facilitate the move towards environmental dialogue with other governments which show a preference for this kind of 'bottom-up trial and error' method.

Environmental policy is, after all, a dynamic policy by its very nature. It is a policy which involves dues having to be paid; also the approach suggested by the Council is experimental. While there are good grounds for expecting improvements in effectiveness and efficiency when compared with current policy, doubts remain regarding the extent to which this approach can ensure that the objectives set are achieved within the time set. The possibility that the social momentum will exceed expectations cannot be excluded. It may prove to be the case that the social effects of environmental policy turn out to be less negative than expected, with environmental benefits being gained at relatively little cost to prosperity elsewhere. If institutions and individuals are induced to behave differently as a result of whatever mechanism, the result could be a change in attitudes, with environmentally friendly behaviour being seen as the norm. In this context, a change of attitude means not only refraining from behaving in a certain way or from certain actions, such as reducing car use or the wasteful use of fertilizers. It also means introducing consumption and production processes which, technologically speaking, are more satisfactory when it comes to protecting the environment. This would produce a momentum to

stimulate further technological developments along these lines which would in turn make for a more efficient use of energy and raw materials and reduce emissions of substances which pollute the environment. In this way, the transfer of environmental burden to future generations will be reduced and environmentally responsible behaviour will be ensured, at the same time preserving prosperity.

However, it is also possible to conceive of the opposite happening. The deployment of certain instruments may encounter such resistance that the change of attitudes predicted on the basis of connections made in the past either does not come about or comes to nothing. In a restricted labour market regulatory charges, for example, may harm competitiveness by forcing wages up. All these possibilities indicate that there is every reason for the relationship between the objectives, the schedules and the instruments used to be regularly re-examined; no single category should be declared to be sacrosanct in advance.

The Council has published the following Reports to the Government

First term of office

1 Europese Unie (European Union), 1974.

2 Structuur van de Nederlandse economie (Structure of the Netherlands Economy), 1974.

3 Energiebeleid op langere termijn (Long-term Energy Policy), 1974. Reports 1 to 3 are published in one volume.

4 Milieubeleid (Environment Policy), 1974.

5 Bevolkingsprognoses (Population Forecasis), 1974.

6 De organisatie van het openbaar bestuur (The Organization of Publics Administration), 1975.

7 Buitenlandse invloeden op Nederland: Internationale migratie (Foreign Influence on the Netherlands: International Migration), 1976.

8 Buitenlandse invloeden op Nederland: Beschikbaarheid van wetenschappelijke en technische kennis (Foreign Influcence on the Netherlands: Availability of Scientfic and Technical Knowledge), 1976.

9 Commentaar op de Discussienota Sectorraden Wetenschapsbeleid (Comments on the discussion Paper on Sectoral Council of Science Policy), 1976.

10 Commentaar op de nota Contouren van een toekomstig onderwijsbestel (Comments on the White Paper on the Contours of the Future Eduacation System), 1976.

11 Overzicht externe adviesorganen van de centrale overheid (Survey of external Advisory Bodies of the Central Government), 1976.

12 Externe adviesorganen van de centrale overheid, beschrijving, ontwikkelingen, aanbevelingen (External Advisory Bodies of the Central Government: Description, Developments, Recommendations), 1977.

13 'Maken wij er werk van?' Verkenningen omtrent de verhouding tussen actieven en niet-actieven 'Do we make Work our Business?' An Exploratory Study of the Relations between Economically Active and Inactive Persons), 1977.

14 Overzicht interne adviesorganen van de centrale overheid (Survey of Internal Advisory Bodies of the Central Government), 1977.

15 De komende vijfentwintig jaar, een toekomstverkenning voor Nederland (The Next Twenty-Five Years: a Survey of Future Developments in the Netherlands), 1977.

16 Over sociale ongelijkheid, een beleidsgerichte probleemverkenning (On Social Inequality: a Police-oriented Study), 1977.

Second term of office

17 Etnische minderheden – A. Rapport aan de regering; B. Naar een algemeen etnisch minderhedenbeleid? (Ethnic minorities – A. Report to the Government; B. Towards on Overall Ethnic Minorities Policy?), 1979.

18 Plaats en toekomst van de Nederlandse industrie (Industry in the Netherlands: its Place and Future), 1980.

19 Beleidsgerichte toekomstverkenning: deel 1. Een poging tot uitlokking (A Policy-oriented Survey of the Future: Part 1. An Attempt to Challenge), 1980.

20 Democratie en geweld – Probleemanalyse naar aanleiding van de gebeurtenissen in Amsterdam op 30 april 1980 (Democracy and Violence – an Analysis of Problems in Connection with the Events in Amsterdam on April 30, 1980), 1980.

21 Vernieuwing in het arbeidsbestel (Prospects for Reforming the Labour System), 1981.

22 Herwaardering van welzijnsbeleid (A Reappraisal of Welfare Policy), 1982.

23 Onder invloed van Duitsland. Een onderzoek naar gevoeligheid en kwetsbaarheid in de betrekkingen tussen Nederland en de Bondsrepubliek (The German Factor, A Survey of Sensitivity and Vulnerability in the Relationship between the Netherlands and the Federal Republic), 1982.

24 Samenhangend mediabeleid (A Coherent Media Policy), 1982.

Third term of office

25 Beleidsgerichte toekomstverkenning: deel 2; Een verruiming van perspectief (A Policy-oriented Survey of the Future: Part 2: Towards a Broader Perspective), 1983.

26 Waarborgen voor zekerheid; een nieuw stelsel van sociale zekerheid in hoofdlijnen (Safeguarding Social Security), 1985.

27 Basisvorming in het onderwijs (Basic Eduaction), 1986.

28 De onvoltooide Europese integratie (The Unfinished European Integration), 1986.

29 Ruimte voor groei (Scope for Growth), 1987.

30 Op maat van het midden- en kleinbedrijf (Tailoring Policy to the Needs of the Small and Medium-sized Business), 1987.

31 Cultuur zonder grenzen (Culture and Diplomacy), 1987.

32 De financiering van de Europese Gemeenschap (Financing the European Community), 1987

33 Activerend arbeidsmarktbeleid (An Active Labour Market Policy), 1987.

34 Overheid en toekomstonderzoek (Government and Future Research), 1988

Fourth term of office

35 Rechtshandhaving (Maintenance of the Law), 1989

36 Allochtonenbeleid (Immigrant Policy), 1989

37 Van de stad en de rand (Institutions and Cities; the Dutch Experience), 1990

Reports nos. 13, 15, 17, 18, 28, 31 and 32 have been translated into English; English summaries are available of Reports nos. 16, 18, 19, 20, 25, 26, 27, 29, 30, 33, 34 and 37; Report no 23 has been translated into German.

The Council has published the following Preliminary and background studies (in Dutch)

First term of office

V 1 W.A.W. van Walstijn, Kansen op onderwijs; een literatuurstudie over ongelijkheid in het Nederlandse onderwijs (Educational Opportunities: a Literature Study of Inequality in the Netherlands Educational System) (1975)

V 2 I.J. Schoonenboom en H.M. In 't Veld-Langeveld, De emancipatie van de vrouw (Women's Emancipation) (1976)

V 3 G.R. Muster, Van dubbeltjes en kwartjes, een literatuurstudie over ongelijkheid in de Nederlandse inkomstenverdeling (Dimes and Quarters: a Literature Study on Inequality in the Distribution of Income in the Netherlands) (1976)

V 4 J.A.M. van Weezel a.o., De verdeling en de waardering van arbeid (The Distribution and Appreciation of Work) (1976)

V 5 A.Ch.M. Rijnen a.o., Adviseren aan de overheid (Advising the Government) (1977)

V 6 Verslag Eerste Raadsperiode 1972-1977 (Report on the First Term of Office) (1972-1977)*

Second term of office

V 7 J.J.C. Voorhoeve, Internationale Macht en Interne Autonomie International Power and Internal Autonomy) (1978)

V 8 W.M. de Jong, Techniek en wetenschap als basis voor industriële innovatie – Verslag van een reeks van interviews (Technology and Science as a base for Industrial Innovation) (1978)

V 9 R. Gerritse, Instituut voor Onderzoek van Oveheidsuitgaven: De publieke sector: ontwikkeling en waardevorming – Een vooronderzoek (The Public Sector: Development and Valuation) (1979)

V10 Vakgroep Planning en Beleid/Sociologisch Instituut Rijksuniversiteit Utrecht: Konsumptieverandering in maatschappelijk perspectief (Shifts in Consumption in a Social Perspective) (1979)

V11 R. Penninx, Naar een algemeen etnisch minderhedenbeleid? Opgenomen in rapport nr. 17 (Towards an Overall Ethnic Minorities Policy? Attached to Report nr. 17) (1979)

V12 De quartaire sector – Maatschappelijke behoeften en werkgelegenheid – Verslag van een werkconferentie (The Quarternary Sector: Societal Requirements and Employment Opportunities) (1979)

V13 W. Driehuis en P.J. van den Noord, Produktie, werkgelegenheid en sectorstructuur in Nederland 1960-1985 (Output, Employment and the Structure of Production in the Netherlands, 1960-1985) Modelstudie bij het rapport Plaats en toekomst van de Nederlandse industrie (1980)

V14 S.K. Kuipers, J. Muysken, D.J. van den Berg en A.H. van Zon, Sectorstructuur en economische groei: een eenvoudig groeimodel met zes sectoren van de Nederlandse economie in de periode na de tweede wereldoorlog (The structure of Production and Economic Growth: a Simple Six-Sector Growth Model of the Dutch Economy in the Post-War Period) Modelstudie bij het rapport Plants en toekomst van de Nederlandse industrie (1980)

V15 F. Muller, P.J.J. Lesuis en N.M. Boxhoorn, Een multisectormodel voor de Nederlandse economie in 23 bedrijfstakken (A Multi-Sector Model of the Dutch Economy Divided into 23 Branches of Industry).
F. Muller, Veranderingen in de sectorstructuur van de Nederlandse economie 1950-1990 (Shifts in the Structure of Production in the Dutch Economy 1950-1990). Modelstudie bij het rapport Plaats en toekomst van de Nederlandse industrie (1980)

V16 A.B.T.M. van Schaik, Arbeidsplaatsen, bezettingsgraad en werkgelegenheid in dertien bedrijfstakken (Jobs, Capacity, Utilization and Employment Opportunities in Thirteen Branches of Industry) Modelstudie bij het rapport Plaats en toekomst van de Nederlandse industrie (1980)

V17 A.J. Basoski, A. Budd, A. Kalff, L.B.M. Mennes, F. Racké en J.C. Ramaer, Exportbeleid en sectorstructuurbeleid (Export Policy and Structural Policies) Pre-adviezen bij het rapport Plaats en toekomst van de Nederlandse industrie (1980)

* Also available in English

V18 J.J. van Duijn, M.J. Eleman, C.A. de Feyter, C. Inja, H.W. de Jong, M.L. Mogendorff en P. VerLoren van Themaat, Sectorstructuurbeleid: mogelijkheden en beperkingen (Structural Policies: Prospects and Limitations) Pre-adviezen bij het rapport Plaats en toekomst van de Nederlandse industrie (1980)

V19 C.P.A. Bartels, Regio's aan het werk: ontwikkelingen in de ruimtelijke spreiding van economische activiteiten in Nederland (Putting Regions to Work: Trends in the Regional Distribution of Economic Activity in the Netherlands) Studie bij het rapport Plaats en toekomst van de Nederlandse industrie (1980)

V20 M.Th. Brouwer, W. Driehuis, K.A. Koekoek, J. Kol, L.B.M. Mennes, P.J. van den Noord, D. Sinke, K. Vijlbrief en J.C. van Ours, Raming van de finale bestedingen en enkele andere grootheden in Nederland in 1985 (Estimate of the Final Expenditure and some other Data in the Netherlands in 1985) Technische nota's bij het rapport Plaats en toekomst van de Nederlandse industrie (1980)

V21 J.A.H. Bron, Arbeidsaanbod-projecties 1980-2000 Projections of the Labour Supply 1980-2000) (1980)

V22 A. Faludi, R.J. in 't Veld, I.Th.M. Snellen en P. Thoenes, Benaderingen van planning; vier preadviezen over beleidsvorming in het openbaar bestuur (Approaches to Planning) (1980)

V23 Beleid en toekomst (Government Policy and the Future), report of a symposium on the report Beleidsgerichte toekomstverkenning deel I (Policy-Oriented Survey of the Future, Part I) (1981)

V24 L.J. van den Bosch, G. van Enckevort, Ria Jaarsma, D.B.P. Kallen, P.N. Karstanje, K.B. Koster, Educatie en welzijn (Education and Welfare) (1981)

V25 J.C. van Ours, D. Hamersma, G. Hupkes, P.H. Admiraal, Consumptiebeleid voor de werkgelegenheid (Consumption Policy for Employment) Background reports to the report Vernieuwingen in het Arbeidsbestel (Prospects for Reforming the Labour System) (1982)

V26 J.C. van Ours, C. Molenaar, J..A.M. Heijke, De wisselwerking tussen schaarsteverhoudingen en beloningsstructuur (The interaction between Relative Scarcities and the Remuneration Structure) Background reports tot the report Vernieuwingen in het Arbeidsbestel (Prospects for Reforming the Labour System) (1982)

V27 A.A. van Duijn, W.H.C. Kerkhoff, L.U. de Sitter, Ch.j. de Wolff, F. Sturmans, Kwaliteit van de arbeid (The Quality of Work) Background reports to the report Vernieuwingen in het Arbeidsbestel (Prospects for Reforming the Labour System) (1982)

V28 J.G. Lambooy, P.C.M. Huigsloot en R.E. van de Landgraaf, Greep op de stad? Een institutionele visie op stedelijke ontwikkeling en de beïnvloedbaarheid daarvan (Getting Cities under Control? An Institutional Approach to Urban Development and its Controllability) (1982)

V29 J.C. Hess, F. Wielenga, Duitsland in de Nederlandse pers – altijd een probleem? Drie dagbladen over de Bondsrepubliek 1969-1980 (Germany in the Dutch Press: Always a Problem? Reporting by three newspapers on West Germany, 1969-1980) (1982)

V30 C.W.A.M. van Paridon, E.K. Greup, A. Ketting, De handelsbetrekkingen tussen Nederland en de Bondsrepubliek Duitsland (The Trading Relationship between the Netherlands and the Federal Republic of Germany) (1982)

V31 W.A. Smit, G.W.M. Tiemessen, R. Geerts: Ahaus, Lingen en Kalker; Duitse nucleaire installaties en de gevolgen voor Nederland (Ahaus, Lingen and Kalkar: German Nuclear Facilities and their Implications for the Netherlands) (1983)

V32 J.H. von Eije: Geldstromen en inkomstenverdeling in de verzorgingsstaat (Money Flows and the Distribution of Income in the Welfare State) (1982)

V33 Report on the Second Term of Office 1978-1982*

V34 P. den Hoed, W.G.M. Salet en H. van der Sluijs: Planning als onderneming (Planning as a Form of Action) (1983)

* Also available in English

V35 H.F. Munneke e.a.: Organen en rechtspersonen rondom de centrale overheid (Administative Bodies on the Periphery of Central Government); two volumes (1983)

V36 M.C. Brands, H.J.G. Beunders, H.H. Selier: Denkend aan Duitsland; een essay over moderne Duitse geschiedenis en enige hoofdstukken over de Nederlands-Duitse betrekkingen in de jaren zeventig (Thinking about Germany; An Essay on Modern German History, with some Chapters on Dutch-German Relations in the Seventies) (1983)

V37 L.G. Gerrichhauzen: Woningcorporaties; Een beleidsanalyse (Housing Corporations: A Policy Analysis) (1983)

V38 J. Kassies, Notities over een heroriëntatie van het kunstbeleid (Notes on a Reorientation of Policy on the Arts) (1983)

V39 Leo Jansen, Sociocratische tendenties in West-Europa (Sociocratic trends in Western Europe) (1983)

Third term of office

V40 G.J. van Driel, C. van Ravenzwaaij, J. Spronk en F.R. Veeneklaas: grenzen en mogelijkheden van het economisch stelsel in Nederland (Limits and Potentials of the Economic System in the Netherlands) (1983)

V41 Adviesorganen in de politieke besluitvorming *(Advisory Bodies in the Political Decision-Making Process)*; Report of a symposium by A.Th. van Delden and J. Kooiman (1983)

V42 E.W. van Luijk, R.J. de Bruijn: Vrijwilligerswerk tussen betaald en onbetaald werk; een verkennende studie op basis van een enquête (Volunteering between Paid and Unpaid work; an Exploratory Study Based on a Survey) (1984)

V43 Planning en beleid (Planning and Policy); Report of a Symposium on the Study Planning as a Form of Action (1984)

V44 W.J. van der Weijden, H. van der Wal, H.J. de Graaf, N.A. van Brussel, W.J. ter Keurs: Bouwstenen voor een geïntegreerde landbouw (Towards an Integrated Agriculture) (1984)*

V45 J.F. Vos, P. de Koning, S. Blom: Onderwijs op de tweesprong; over de inrichting van basisvorming in de eerste fase van het voortgezet onderwijs (The organization of the Core Curriculum in the First Stage of Secondary Education) (1985)

V46 G. Meester, D. Strijker: Het Europese landbouwbeleid voorbij de scheidslijn van zelfvoorziening (The European Agricultural Policy Beyond the Point of Self-Sufficiency) (1985)

V47 J. Pelkmans: De interne EG-markt voor industriële produkten (The Internal EC-Market for Industrial Products) (1985)*

V48 J.J. Feenstra, K.J.M. Mortelmans: Gedifferentieerde integratie en Gemeenschapsrecht: institutioneel- en materieelrechtelijke aspecten (Differentiated Integration and Community Law: Institutional and Substantive Aspects) (1985)

V49 T.H.A. van der Voort, M. Beishuizen: Massamedia en basisvorming (Mass Media and the Core Curriculum) (1986)

V50 C.A. Adriaansens, H. Priemus: Marges van volkshuisvestingsbeleid (Margins of Housing Policy) (1986)

V51 E.F.L. Smeets, Th.J.N.N. Buis: Leraren over de eerste fase van het voortgezet onderwijs (Teachers' Opinions in the First Stage of Secondary Education) (1986)

V52 J. Moonen: Toepassing van computersystemen in het onderwijs (The Use of Computer Systems in Education) (1986)

V53 A.L. Heinink, H. Riddersma: Basisvorming in het buitenland (An International Comparison of Core Curricula) (1986)

V54 Zelfstandige bestuursorganen (Quasi-Autonomous Non-Governmental Organisations) Verslag van de studiedag op 12 november 1985 (1986)

V55 Europese integratie in beweging (European Integration in Motion) Verslag van een conferentie, gehouden op 16 mei 1986 (1986)

* Also available in English

V56 C. de Klein, J. Collaris: Sociale ziektekostenverzekeringen in Europees perspectief (National Health Insurance in a European Perspective) (1987)

V57 R.M.A. Jansweijer: Private leefvormen, publieke gevolgen (Private Households, Public Consequences) (1987)

V58 De ongelijke verdeling van gezondheid (The Unequal Distribution of Health) Verslag van een conferentie op 16-17 maart 1987 (1987)

V59 W.G.M. Salet: Ordening en sturing in het volkshuisvestingebeleid (Regulation and Management of Housing Policy) (1987)

V60 H.G. Eijgenhuijsen, J. Koelewijn, H. Visser: Investeringen en de financiële infrastructuur (Investments and the Financial Infrastructure) (1987)

V61 H. van der Sluijs: Ordening en sturing in de ouderenzorg (Regulation and Management of Care for the Eldery) (1980)

V62 Report on the Third Term of Office 1983-1987*

Fourth term of office

V63 Milieu en groei (Environmental Control and Growth) Verslag van een studiedag op 11 februari 1988 (1988)

V64 De maatschappelijke gevolgen van erfelijkheidsonderzoek (Social consequences of Genetic Research) Verslag van een conferentie op 16-17 juni 1988 (1988)*

V65 H.F.L. Garretsen en H. Raat: Gezondheid in de vier grote steden (Health in the Four Big Cities) (1989)

V66 P. de Grauwe, A. Knoester, A. Kolodziejak, A. Muijzers, F. van der Ploeg, C.J. Rijnvos: De Europese monetaire integratie: vier visies (European Monetary Integration: Four Visions) (1989)

V67 Th. Roelandt, J. Veenman: Allochtonen van school naar werk (Immigrants from School to Work) (1990)

V68 W.H. Leeuwenburgh, P. van den Eeden: Onderwijs in de vier grote steden (Education in the Four Big Cities) (1990)

V69 M.W. de Jong, P.A. de Ruijter (red.): Logistiek, infrastructuur en de grote stad (Logistics, infrastructure and the Big Cities) (1990)

V70 C.P.A. Bartels, E.J.J. Roos: Sociaal-economische vernieuwing in grootstedelijke gebieden (Social economic Innovation in the Big Cities regions) (1990)

V71 W.J. Dercksen (ed.): The Future of Industrial Relations in Europe; Proceedings of a Conference in hounour of Prof. W. Albeda (1990)*

* Also available in English

The Council commissioned a number of experts to carry out preliminary studies for the report 'A Coherent Media Policy'. The following studies were published in a separate series entitled 'Media Policy Background and Preliminary Studies' (in Dutch):

M 1 J.M. de Meij: Overheid en uitingsvrijheid (The Government and Freedom of Speech) (1982)

M 2 E.H. Hollander: Kleinschalige massacommunicatie; locale omroepvormen in West-Europa (Small-scale Mass Communications: Local Broadcasting Forms in Western Europe) (1982)

M 3 L.J. Heinsman/Nederlandse Omroep Stichting: De kulturele betekennis van de instroom van buitenlandse televisieprogramma's in Nederland – Een literatuurstudie (The Cultural Significance of the Inflow of Foreign Television Programmes in the Netherlands – A Survey of the Literature) (1982)

M 4 L.P.H. Schoonderwoerd, W.P. Knulst/Sociaal en Cultureel Planbureau: Mediagebruik bij verruiming van het aanbod (Media Use and a Wider Media Range) (1982)

M 5 N. Boerma, J.J. van Cuilenburg, E. Diemer, J.J. Oostenbrink, J. van Putten: De omroep: wet en beleid; een juridisch-politicologische evaluatie van de Omroepwet (Broadcasting – Legislation and Government Policy: A Legal and Political Evaluation of the Broadcasting Act) (1982)

M 6 Intomart B.V.: Etherpiraten in Nederland (Radio Pirates in the Netherlands) (1982)

M 7 P.J. Kalff/Instituut voor Grafische Techniek TNO: Nieuwe technieken voor productie en distributie van dagbladen en tijdschriften (New Techniques for the Production and Distribution of Newspapers and Magazines) (1982)

M 8 J.J. van Cuilenburg, D. McQuail: Media en pluriformiteit; een beoordeling van de stand van zaken (The Media and Diversity: An Assessment of the State of Affairs) (1982)

M 9 K.J. Alsem, M.A. Boorman, G.J. van Helden, J.C. Hoekstra, P.S.H. Leeflang, H.H.M. Visser: De aanbodsstructuur van de periodiek verschijnende pers in Nederland (The Supply Structure of Regular Press Publications in the Netherlands) (1982)

M10 W.P. Knulst/Sociaal en Cultureel Planbureau: Mediabeleid en cultuurbeleid; Een studie over de samenhang tussen de twee beleidsvelden (Media Policy and Cultural Policy: A Study of the Interrelationship between the two Fields of Policy) (1982)

M11 A.P. Bolle: Het gebruik van glasvezelkabel in lokale telecommunicatienetten (The Use of Fibre Optic Cable in Local Telecommmunications Networks) (1982)

M12 P. te Nuyl: Structuur en ontwikkeling van vraag en aanbod op de markt voor televisieprodukties (The Structure and Development of Demand and Supply in the Market for Television Productions) (1982)

M13 P.J.M. Wilms/Instituut voor Onderzoek van Overheidsuitgaven: Horen, zien en betalen; een inventariserende studie naar de toekomstige kosten en bekostigingen van de omroep (Listening, Viewing and Paying: An Inventory Study of the Future Cost and Funding of Broadcasting) (1982)

M14 W.M. de Jong: Informatietechniek in beweging, consequenties en mogelijkheden voor Nederland (Information Technology in Flux: Consequences and Possibilities for the Netherlands) (1982)

M15 J.C. van Ours: Mediaconsumptie; een analyse van het verleden, een verkenning van de toekomst (Media Consumption: An Analysis of the Past and Survey of the Future) (1982)

M16 J.G. Stappers, A.D. Reijnders, W.A.J. Möller: De werking van massamedia; een overzicht van inzichten (The operation of Mass Media: A Survey of the State of Understanding) (1983)

M17 F.J. Schrijver: De invoering van kabeltelevisie in Nederland (The Introduction of Cable in the Netherlands) (1983)