

IHS WORKING PAPERS

NUMBER 11 / 1995

INSTITUTE FOR HOUSING AND URBAN DEVELOPMENT STUDIES

ROTTERDAM / THE NETHERLANDS

Producer Responsibility in Waste Management

*The Dutch model, with specific reference to
Packaging*

By Marielle Snel

Producer Responsibility in Waste Management - the Dutch Model, with Specific Reference to Packaging

Marielle Snel

11

WORKING PAPERS



IHS Working Paper Series No. 11

Producer Responsibility in Waste Management - the Dutch Model, with Specific Reference to Packaging

by **Marielle Snel**

The IHS Working Papers Series serves as a platform for colleagues from networking institutions, participants and staff of IHS. The series aims to disseminate professional and academic work in the field of urban development and housing. The papers are made available to interested individuals and institutions.

ISSN:
0926-7204

Editorial Board:
David Edelman
Monique Peltenburg
Carley Pennink
Michael Rodell

Correspondence:
Carolien Bos
Institute for Housing and Urban Development Studies
P.O. Box 1935
3000 BX Rotterdam, The Netherlands.

Telephone:
31-10-4021540

Telefax:
31-10-4045671

© IHS, 1995. Copying with reference to title, author and publisher is permitted.

IHS Working Paper Series
No. 11

**Producer Responsibility in Waste
Management - the Dutch Model
with Specific Reference to
Packaging**

Marielle Snel

1995

Table of Contents

1	Introduction.....	1
2	Historical Overview of Waste Management in the Netherlands.....	3
3	Defining Private Responsibility in Waste Management .	9
	3.1 Consumer responsibility	9
	3.2 Producer responsibility	11
	3.3 Social acceptability of producer/consumer responsibility	12
4	Current Practices of 'Voluntary' Covenants	15
	4.1 'Voluntary' covenant in the packaging industry in the Netherlands	17
	4.2 The EU Directive concerning packaging and a comparative look at the packaging legislation in some EU countries	21
	4.3 Harmonization with EU waste regulations	25
5	Outlook	27
	References	29
	Abbreviations	31

1

Introduction

The existence of a thriving consumer society within developed countries, such as the Netherlands, has resulted in the generation of large quantities of waste¹, including industrial and consumer pollutants, which place ever increasing strains on available treatment and landfill facilities. Public pressure against disposal of large quantities of waste and the lack of national and local options have inevitably required both national and local Dutch authorities to look urgently into more serious producer responsibility legislation, which includes the promotion of the reuse, recovery and recycling of waste materials on the part of industries and consumers alike.

Although the continuous generation of waste is considered one of the priority environmental issues in the Fifth Environmental Action Programme for the European Community (EC)² "Towards Sustainability", there presently exists hardly any legislation relating to waste *prevention* in general (Ophem, 1994). On the basis of this environmental action programme, however, a European Union (EU) Directive has been developed. One of the aims of the Directive is to harmonize national waste management measures, for example, with respect to the reduction of the impact of packaging and packaging waste (Euro matters, 1992). Presently, the Netherlands and Belgium, compared to their EU counterparts, stand out in their unique approach to waste minimalization through voluntary covenants, in which private producers³ agree with the government to hold themselves responsible for the waste disposal of their products or even for the production of less waste.

1 Waste refers to any substance or object which the holder discards, intends to discard or is required to discard. This excludes gaseous effluent and waste water. Under European law, waste is defined as, "any substance, material product or object which the 'holder' discards or intends or is required to discard, subject to the exclusion, to interpretation by the European Court of Justice, to the application of the European Waste Catalogue and to the conclusions of the technical working group." (Article 1(a) of Council Directive of 18 March 1991 amending Directive 75/442/EEC on waste OJ L 078,26.3.91.).

2 The European Community(EC) has been renamed the European Union(EU) with the signing of the Treaty of European Union with protocols in Maastricht, the Netherlands, on the 7th of February 1992.

3 Producer refers to the entire chain of industries involved in producing and marketing a product.

In this paper, an attempt is made to explain how the Netherlands' voluntary covenants function. It is argued that a study of voluntary covenants such as those found in the Netherlands is relevant for future environmental legislation in EU countries and should be taken into account in a further strengthening of the present policies of waste minimalization.

In order to create a better understanding of how voluntary covenants work in the Netherlands, the general evolution of the country's environmental laws within a historical, legal, and administrative framework is reviewed in Section 2. Producer responsibility through voluntary covenants is then explained in Section 3, taking as the prime example the Dutch packaging covenant. In Section 4, this covenant is compared to packaging regulations in a number of other EU countries. Finally, it is argued in Section 5 that voluntary covenants represent the beginning of a new era of environmental law geared towards more effective waste minimalization, the experiences of which should eventually be reflected in the EU Directive.

2

Historical Overview of Waste Management in the Netherlands

Since the beginning of time, wastes have been generated in one form or another. Most of these wastes have been organic and therefore largely environmentally friendly. Industrial development remained at a low level through much of history as a majority of the population stayed in the countryside tending mainly to farming (Bruce, 1994). Nonetheless, with the industrial revolution and the thereafter rapid growth of industrial bases and national wealth, the generation of pollution became and remains an important economic and social issue.

In the Netherlands, as early as 1250, the 'Aardenburg by-laws' were produced. These reflected the need to take care of the environment by preventing pollution from entering waterways and roads (Laurijssens, 1993). However only in the 1800's was a beginning made with the collection, transportation and disposal of domestic waste at special disposal sites. By 1865, the National Population Health Department was established, becoming in part responsible for hygiene issues including ground water and air pollution. Specific initiatives to be made with regards to these regulations, however, remained part of the municipality's own responsibility (Van Den Broek, 1993). In this period, attention started to be given to environmental issues such as clean drinking water, sewage and waste from households. Regulations were first provided by the Nuisance Act of 1875, which remained the only environmental law in the Netherlands for around a century (World Resources, 1994).

Due to the size of the Netherlands (surface area 33 000 Km² of which 3000 km² is water), the disposal of waste at land sites soon became problematic, and new solutions needed to be found as waste was being dumped in unauthorized areas such as the country's waterways. By 1912, the first incinerators were in operation in Amsterdam and Rotterdam, and by 1931, the first large composting site was developed under the Organization of Waste Material (Vuil Afvoer Maatschappij). Only by the 1960's, however, did environmental waste policies become accepted policies nationwide. The municipality of Den Helder, for example, forbade the disposal of waste at its sea coast only in 1957 (Van Den Broek, 1993).

Starting with the 1960's, more concrete steps were taken towards pollution prevention through specific laws. During this period, fundamental waste acts were enacted by the national government. These include: the Nuclear Energy Act, 1963; the Pollution of Surface Waters Act, 1969; the Chemical Waste Act, 1976; the Wastes Act, 1977; the Environmental Protection (General Provisions) Act, 1979; the Ground Waste Act, 1981; the Soil Clean Up Act, 1982; the Environmental Hazardous Substances Act, 1985; and the Water Management Act, 1989⁴. By 1979, a General Environmental Provision Action, which came into operation on the 1st of March 1993, formed the foundation of the Environmental Protection Act⁵, incorporating all these waste acts.

By 1979, Parliament also adopted the Lansink motion, which was an important stepping stone in the formation of policies regarding wastes in the Netherlands. The motion listed waste disposal methods in order of priority, namely: prevention; product recycling; material recycling; useful other applications such as use for energy recovery; disposal by a method other than landfill; and finally landfill disposal (Clement, 1995).

Pollution prevention laws, however, remained relatively ineffective due to their lack of integration with other environmental laws. By the mid 1980's, the nation's weak regulatory system was unable to keep up with continued industrial growth, specifically in the chemical manufacturing and oil refining sectors, which made the Netherlands one of the dirtiest of all industrial nations (World Resources, 1994).

The first multi-year programme with specific indicative targets for waste substances was presented to the Parliament in 1984 by The Ministry of Housing, Spatial Planning and the Environment (Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer, VROM). Some of the objectives of this programme were the following: to bring more waste under control (the waste substance acts did not sufficiently control certain waste flows, especially those related to the increasing shift from domestic waste to larger quantities of industrial waste); to focus more attention in government planning on specific waste flows; to continue the trend towards closure of many of the formerly numerous waste dumps, including hospital waste disposal sites; to give special attention to scrapped motor vehicles, incineration of waste and preparation of compost; to promote more aggressively the reuse of waste, especially by industries, and the separation of waste at source (i.e., pick-up, delivery or combinations of the two); to develop mechanical separation methods; to incorporate waste substances such as construction and demolition waste and waste glass, rubber and plastics into the traditional supply pattern of commodities and

4 See Essential Environmental Information-The Netherlands 1991 for the contents of each specific act.

5 On the 1st of January 1994, a new chapter of the Environmental Protection Act dealing with waste substances came into operation which superseded the Waste Substances Act and Chemical Waste Act.

consumables while ensuring that these new substitutes possess the required quality; to base the environmental protection standards required for certain applications of waste not on waste substances legislation but on other legislation such as the future Soil Protection Act; and, finally, to pursue the future recycling and reusing of waste methods such as composting (Bonomo and Higginson, 1988).

A further boost to the formulation of environmental policies in the Netherlands occurred in 1987 when the Brundtland Report, also called 'Our Common Future,' was produced by the World Commission on Environment and Development (WCED). This report elaborated environmental protection and sustainable development issues within a global context and discussed the role of the international economy, population and human resources, food security, species and ecosystems, energy, industry and other common endeavours such as peace, security, development and, specifically, an acceptable environment (WEDC, 1987). On the basis of this report, the Netherlands moved towards, "a vision of sustainable development that would reduce energy and material consumption, integrate various aspects of environmental protection, and wed environmental goals to economic policy" (World Resources, 1994, pp. 237-238). This was reflected in an influential publication of the Dutch National Institute of Public Health and Environment (Rijksinstituut voor Volksgezondheid en Milieuhygiene, RIVM) entitled 'Concern for Tomorrow' (Zorgen over morgen'), citing key environmental problems at the national and regional levels. Another important report was issued by the Central Economic Council, which concluded that a national economic policy combined with an environmental policy was a workable solution (World Resources, 1994) to the pollution issues of the country.

The basis of these reports prepared the groundwork for the 1989 National Environmental Policy Plan (NEPP) of the Netherlands which addressed eight themes ranging from climatic change to acidification, eutrophication, toxic and hazardous pollutants, waste disposal, disturbance and ground water depletion.

The NEPP outlined the following principles:

- The stand-still principle: objectives should aim to avoid any further deterioration in environmental quality;
- Abatement at source: reduction of waste at its point of origination by clearly identifying who is responsible for preventive and clean up action;
- The polluter pays: producers are also now more responsible, where possible, for disposal of their products when their useful lives are over ('producer' here referring to the entire chain of companies involved in marketing a product). In this manner, the costs of disposal of products are included in the purchase price, reflecting the 'polluter pays' principle;
- Prevention of unnecessary pollution: companies can be obliged to undertake activities to prevent and/or recycle waste through, e.g., environmental licences, 'voluntary' covenants, etc.;

Producer Responsibility in Waste Management

- Application of the most practical technologies: to maximize the effects on waste reduction by, for example, increasing the utilization of waste, and;
- Isolation, management and control of non-treatable waste: 'leakproof' disposal for those materials that can not be recycled, and minimization of risks to humans and the wider environment.

This policy plan also sought to integrate environmental aspects into a variety of social processes by:

- Adopting an integrated approach based on themes and target groups;
- Pursuing internalisation and self-regulation of target groups within frameworks set by the government; and
- Working with integrated long-term planning based on quantitative objectives for policy themes.

Thus, the Dutch government adopted a target group approach⁶ to the environmental objectives of the sectors of: agriculture, industry, oil refineries, power companies, the retail trade, traffic and transport, consumers, the construction industry, waste disposal companies, drinking water companies, sewage and water purification plants and research institutes. The means for achieving the environmental policies of sustainable development included direct financial aid, tax incentives and mechanisms to influence public opinion, such as the provision of information, education and publicity, as well as implementing facilities that provide environmentally friendly behaviour (VROM, 1991).

In 1989, for example, the Dutch government pursued this approach when it promoted the establishment of internal environmental protection systems for different industries based on voluntary agreements (see Section 4) rather than on the command and control approach used in the past. The Community's Eco-Management and Audit Regulation Scheme's (EMA)⁷ main objective is to promote continuous improvements in the environmental performance of industrial activities by stressing the industry's own responsibility to manage its pollution. The scheme is intended mainly as an internal system management tool for the assessment of a company's environmental performance. Although these internal environmental protection systems are not considered mandatory by government, they do, however, provide the government with a means to influence and control company environmental management. As Ophem states, this type of regulation may therefore not only be unique from an EU

6 The target group approach addresses the different key polluters in Dutch society. Through this approach, the Ministry of Environment can more clearly define what is to be achieved and by whom, usually, in the form of quantitative objectives.

7 The Community Eco-Management and Audit Scheme's objectives are to promote industrial environmental performances by: establishing and implementing environmental policies, programmes and management systems by companies in relation to their sites; by constructing a systematic, objective and periodic evaluation of such policies; and by providing information on environmental performance to the public (Ophem, 1994).

point of view, but also worldwide (Ophem, 1994). In essence, as a result of taking part in the EMA, a company implements effective environmental auditing while simultaneously improving its public relations image.

In terms of waste control, by October 1988, a Memorandum on the Prevention and Recycling of Waste was produced by VROM, in which targets for reduction by the year 2000 were set for some 29 waste streams including 'priority categories of waste.' Among them were packaging waste, ferro(metal) in domestic waste, glass, office waste, shop and service waste, plastic waste and paper/cardboard waste. By October 1990, the Minister wrote a letter to Parliament introducing the principle of *extended producer responsibility* through the use of voluntary agreements between government and industries, which could, in general, be transformed into instruments revolving around the polluter pays principle (Clement, 1995).

All policy measures taken up until mid-1990 were reviewed in the 1990 - 2010 National Environmental Outlook, published by RIVM in 1991. This publication focuses specifically on the extent to which these measures would be capable of meeting the targets set for waste recycling by the years 2000 and 2010. It mentions 30 priority waste substances and reports on both the quantities of each of these and the methods of disposal using 1986 and 2000 as reference years. Research undertaken in 1993 has shown that the current policies, including the use of covenants, established for the year 2000 should lead to approximately a 6% reduction in waste production. Nearly three quarters of this will consist of packaging waste. The 2000 target for reuse, meanwhile, has been almost fully met; under the policies now pursued the volume of waste reaching the final phase of reuse will exceed the target (Holland Waste Handling, 1993).

Since 1990, VROM has established a special branch, the Waste Management Council (Afval Overleg Orgaan, AOO), as a means of coordinating its waste management policy with provinces and municipalities. So as to focus on the waste problem most effectively, the AOO updates the rolling Ten Year Programme on Waste Management (TJP-A) every three years. Some of the AOO's other objectives include the promotion of prevention and reuse to the maximum level possible; drastic reduction in landfill; efficient approaches to waste disposal; regional and national self-sufficiency; waste disposal in accordance with existing physical planning and transport policies; and, finally, the minimization of negative environmental effects (AOO, 1992).

Waste generation in the Netherlands was estimated to be around 115 million tons (M.T) in 1991, and this amount will continue to increase in the future if current population and economic growth continue without countervailing measures. In the Netherlands, an estimated total of 60 M.T. of waste generated is sludge, 41 M.T. of waste are generated by households and industries and 14 M.T. are from manure (Visser and Boskma, 1990). The following table indicates the percentages of waste (excluding dredging sludge) from within the various target groups in 1991.

Box 1.: *Waste Generation in the Netherlands*

Categories	Percentages
Agriculture	3.4
Traffic (transport)	1.7
Electricity companies	1.0
Chemical industry	6.3
Building trades	2.8
Consumers	8.8
Waste disposal enterprises and others	45.8
Total	99.8

Source: VROM, 1991

3

Defining Private Responsibility in Waste Management

The entire 'waste chain' can be considered, for the sake of simplicity, as having two main actors: producers (companies) involved in production and marketing and consumers (households) absorbed in buying products for final use and thus in disposing of waste. Both at the level of consumers and of producers, the Dutch national government uses a five-step hierarchical structure for the management of waste based on minimalization, prevention, reuse, recycling, energy recovery from incineration to a certain extent, and, finally, disposal at landfills. On the consumer side, recovery for reuse and recycling now takes place at a relatively large scale, which is, in fact, one of the highest in Europe (See Section 3.1).

The following portion of the paper gives a general overview of both consumer and producer responsibility in terms of waste reduction and recycling that has emerged in the Netherlands as a result of the policies outlined above. This is followed by a section focusing on social acceptability in terms of voluntary behaviour towards waste minimalization or recycling, which in general comprises actions that can be taken from either the producer or consumer side. This background information leads to the major portion of the paper, which is an explanation of how the resulting voluntary covenants in the Netherlands could be applied at the EU level.

3.1 Consumer responsibility

An estimated 5530 kilotons of household waste are produced in the Netherlands per year. This level, in terms of waste per inhabitant, according to an Organization of Economic Cooperation and Development (OECD) report, is slightly higher than that of other European countries (Mingelen, 1995).

In the Netherlands, the Wastes Act requires municipalities to collect domestic waste at least once a week from every resident. Under the Chemical Waste Act, the waste producer is responsible for its own waste. As compared to other sectors, domestic waste production is small, only

Table 1.: Average composition of domestic waste in the Netherlands per household

Waste 1993	%	Kton	Kg/Inhabitant
Paper / cardboard	28.0	1550	102
Wood	0.9	53	3
Plastics	7.7	424	28
Ferro (metal)	3.1	174	11
Non-ferro (non -metal)	0.4	22	1
Glass	8.8	487	32
Textiles	2.8	154	10
Organic	42.2	2332	153
Other	6.1	336	22
Total	100	5530	363

Source: AOO, 1995

around 5 million tons (M.T.) out of the total 115 M.T. of waste produced each year. Although this amount is relatively small, it remains vital to get individuals involved in the concept of voluntary consumer responsibility, because meaningful waste reduction depends upon changes in behavior at all levels in society along the entire length of the waste chain.

Household waste, which is not recycled, is generally partly disposed of by dumping and partly by incineration. Within the Netherlands, there are 11 public incinerators specifically for domestic waste. A total of six of these also produce electricity for some parts of the country (AOO, 1995), although much public controversy remains regarding the negative effects of incineration on pollution levels and public health.

One important objective of Dutch environmental policy, however, is the promotion of reuse, recovery and recycling of waste, and the Netherlands is considered to recycle the highest percentage (60%) of used paper and cardboard in Europe according to the Federation of Recycling Materials (Federatie Herwinning Grondstoffen, FHG) (FHG, 1995). In addition, approximately 73% of domestic glass is collected and reused via a wide network of bottle banks. The Dutch government, as of the beginning of 1994, has also been collecting kitchen and garden waste separately for composting, and this should result in a 25 to 35% reduction in total domestic waste (Laurijssens, 1993).

The Dutch national campaign, "Minder afval heb je zelf in de hand," meaning '(Producing) less waste is in your own hands (i.e., is your own responsibility)', is an example of how the national and local governments have undertaken action on the consumer side, where public awareness remains the key link in promoting effective waste management. Thus, similar to industries in the Netherlands, Dutch consumers have also moved towards more conscious waste management behaviour through voluntary action.

3.2 Producer responsibility

Dutch environmental policies concerning industries have evolved dramatically over the past ten years, as have the number and variety of instruments. These now include a substantial body of environmental laws and regulations, including direct regulations such as environmental licences (or permits) for individual industries and companies (VROM, 1994); indirect regulations such as economic incentives through, for example, environmental taxes and subsidies; and alternative instruments such as the so-called '*voluntary covenants*' based on private rather than administrative law with less rigid 'partnership based' agreements made between government and industries (Vonkeman and Stielstra, 1995).

One historical overview from the beginning of the 1970s notes as well that the national government has implemented a number of additional industrial environmental policies towards waste minimalization by, for example, stimulating the development and application of clean technologies (World Resources, 1994). Within the industrial sector, attention was first concentrated on the reduction of process emissions and later shifted to the modification of existing and new processes, as well as to the development of new products whose production would be less hazardous to the environment. The objective of this policy is to reduce pollution at source.

The Netherlands, by the 1970s, contained a large number of industries whose wastes and emissions flowed into the major rivers. One of the responses of the national government to this pollution was to introduce standards to stimulate the development of innovative technology for waste water treatment and also for dust abatement and fuel gas cleaning. This policy of stimulation had various implications such as the promotion of the development of highly efficient pollution abatement techniques and the necessary hardware. The government also stimulated the active transfer of clean technology know-how to its potential users and supported cooperation and joint research on the national and international levels. As strict regulations were in no way a guarantee for a healthy environment, the national government also set up an advisory committee with members from various industries, technical universities, large research institutes and five ministries in order to develop a basis for voluntary compliance with its environmental policies.

Voluntary participation in the Netherlands has now become widespread and institutionalized. For example, there is now a high level of standardization of companies with respect to their environmental business practices because voluntary compliance with certain guidelines leads to government environmental certification. This has allowed the public sector to focus more clearly on companies not taking part in environmental management. In addition, non-participating companies are encouraged to find partner companies in order to join the environmental certification programme, since evidence of environmental certification improves the

public image of companies and proves to be an advantage in dealing with banks and insurers who view the environment as a risk factor (VROM, 1994).

In many cases, voluntary participation in the development of environmental policies also led to the creation of formal voluntary covenants between government and industries. In the Netherlands, over the past ten years, a total of 52 covenants have been implemented, 18 relating to the environmental properties of products, 8 relating to process emissions and 26 relating to energy conservation (National Environmental Policy Plan 2, 1994).

3.3 Social acceptability of producer/consumer responsibility

Often, much attention is placed on technical, commercial and environmental aspects of waste management, while social and cultural considerations and acceptability are neglected despite the fact that they prove essential in determining whether attempts to introduce changes in a system or in attitudes are successful.

Producer/consumer responsibility in the packaging industry, for example, entails all packaging producers and importers of raw materials, manufacturers of packaging materials, users of packaging, and those who put their paper products on the market. Earlier, however, little research into the economic and social acceptability of schemes was done. This began to change in the past decade as at-source separation for recycling of household waste began to be used as a low technology strategy for reducing the need for new landfills. Findings from recent surveys of consumer responsibility schemes also suggest that people conserve resources as a means of personal satisfaction derived from conservation activities. Recovery for recycling offers a technically feasible and often cost-effective solution to the waste management problem, and its rate of adoption has been quite successful overall. As a result, social scientists, more specifically behavioral scientists, have focused on the motivational aspects of conservation and the means of finding out how to encourage more people to recycle.

In general, studies addressing the social acceptability aspects of recycling can be grouped into two categories stressing respectively extrinsic and intrinsic incentives. These studies have revealed that a good deal of human behaviour is not explained in terms of anticipated benefits (extrinsic rewards) but rather in terms of goals and rewards that arise out of active participation in a series of ongoing recycling activities (intrinsic motivation). These studies have also shown that everyday satisfaction is derived from frugality applied to the avoidance of wasteful practices, and that meaningful participation in waste management activities can make a difference in the long run (Young, 1986).

Extrinsic incentives for recycling have often been monetary rewards. Historically, local waste programmes have usually provided residents with little incentive for limiting the amount of waste they produce. However, recent recycling experiments at the household level, such as the unit-pricing scheme, are changing this fact. This specific scheme is based on charging households for waste collection services in proportion to the volume or weight and type of materials collected. Unit-pricing schemes are usually run in combination with recycling collection programmes. Volume-based or weight-based rates create direct price incentives to recycle, compost, reduce and to simply reuse at source by rewarding these types of behaviour with lower waste service charges. Such unit-pricing programmes have resulted in: increased diversion of waste streams for recycling programs; decreased landfill and total waste volumes; and increased source reduction activities (Miranda, 1993).

Within the Netherlands, localities such as Oostzaan, Breda and Lemsterland have been successful in using such schemes. However, there are only a few such examples, as these types of schemes are still not widely placed around the country. Reasons for this include bureaucratic barriers with respect to the introduction of a set of differential tariffs for collection and disposal of waste (Alaerds, 1995). This, however, is less problematic for the household level, where not only extrinsic but also intrinsic incentives can be developed.

In retrospect, although in the Netherlands' consumers and producers are well ahead of some of their EU counterparts in terms of their responsible waste behavior habits, the waste system in general remains in an early stage of effective management. In essence, both producers and consumers need to be involved in voluntary actions in which the party producing the waste takes responsibility to either minimize or recycle the materials.

4

Current Practices of 'Voluntary' Covenants

A covenant as used in this paper, represents either a formal agreement or an informal “gentlemen’s” agreement between two or more parties, and it is used frequently as an instrument, rather than simply legislation, for producing and implementing policy. The packaging covenant, as described later, represents a more formal covenant between government and industries. It is based on a consensus-approach, defined primarily as a process whereby government and the noted parties try to come to some type of decision. The government with the party(ies) involved consider all the various resolutions and choose the best option for both sides (Mingelen, 1995).

A brief historical overview shows that environmental covenants have been implemented in the Netherlands within large industries such as petrochemicals as early as 1964, although at the time these covenants were enforced as a policy instrument rather than established as voluntary arrangements (Hiemstra, 1990). However, by the 1970’s, conventional environmental policies were not able to keep up with the continuous growth of pollutants in industries. By the 1980’s, the national government decided to take a new approach towards waste minimalization by promoting the formation of covenants more on a ‘voluntary’ basis, and for all types of industries, as a means of controlling environmental pollution. Government and industries were the “main parties”.

The policy to develop covenants was promoted in the National Environmental Policy Plan (NEPP, 1989) for reasons of energy saving and also, in the agricultural sector, as an emission reduction method (Hiemstra, 1990). In the NEPP, these covenants were thus viewed as a means for solving specific and concrete waste problems, although the act was often criticised for its too general formulation. In the National Environmental Plan Plus (NEPP Plus, 1994), clearer formulations were made with regard to how the voluntary covenants should function and to what degree the government should play a role.

It should be mentioned that the adjective ‘voluntary’ does not reflect the correct terminology for such an agreement, since government still plays a vital role in guiding the formation of the covenants and in

monitoring environmental pollution. Actually, industries have little option but to form covenants if they want to avoid complete government control, although the advantage is that they themselves get involved in formulating the control regulations.

'Voluntary' covenants, therefore, represent a self-regulation mechanism which is better understood as a 'quasi-self regulating' method of reducing waste. This type of covenant can, therefore, best be described as a 'semi-voluntary' agreement based on the polluter pays principle, whereby industries which do not initially comply are more or less forced to adapt through pressure by government and their business partners.

Moreover, instead of simply complying with existing environmental legislation, those companies that take part in a covenant agreement become involved with the government in its application of those laws. There may be a possibility that in the future the parties to these covenants will even become involved in the further development of the environmental legislation, including acts to force unwilling firms to change their waste disposal habits (World Resources, 1994).

Table 2.: *Legislation in comparison with voluntary covenants*

Advantages-Legislation	Disadvantages-Legislation
Enforcement (in theory)	Difficulties with control and enforcement, enforcement-costs
Guaranteed outcome	Lack of flexibility
Democratic process	Slow and delayed procedures
Wide reaching	Complicated procedures and processes
Inexpensive (one sided-organizationally)	Cost shifted to others
	Lack of economic consequence/market-orientation
	One-sided
	Individual responsibilities are undermined
Advantages-Covenants	Disadvantages-Covenants
Internal monitoring/observations	Limited reach
Creates support and commitment	Control and penalties only for members
Recognises industrial responsibilities	Lack of legislative democratic control
Internalisation	Other parties are not bound
Joint decision making	Position of third parties can be problematic
Creates commitment	Costs of consultation, organisation costs
Economic effects taken into consideration	Government is limited in use of other instruments
Producers are quick to react	Government is limited in use of other instruments
Informal	
Flexible	
Minimal enforcement costs	
In transitional phases can be used effectively	

Source: Aalders, Koppen, Neuberger en Veerfaillie, Stout en Hoekeman, Tonnaer en Herweijer, Winsemius: in Mingelen, 1995.

In the Netherlands, voluntary covenants have been used most often thus far to further specific policy objectives, such as reducing the amount of packaging materials, terminating the use of cadmium as a dye in beer and minimizing the sale of mercury batteries (Vonkeman and Stielstra, 1995).

Various reports have been written about the advantages and disadvantages of the Dutch type of 'voluntary' covenant (Hiemstra, 1990; Klok, 1989; Wiggers et al, 1994; NEPP2, 1994; Mingelen, 1995), and Table 2. provides a summary of the main arguments.

The table indicates that the primary **negative** effects of covenants can be described as follows:

- They have a common characteristic of compromise;
- Their legalities remain unclear (Hiemstra, 1990);
- Many medium and small size enterprises are prone to become 'free riders' of the system, and
- There is a lack of continuity and consistency in monitoring industries as well as in the environmental policies themselves (NEPP Plus, 1994).

Usually, the agreed upon covenant is not an absolute ruling based on the best option for the environment at large but rather a *combination* of what is beneficial to the company and to the government (Hiemstra, 1990).

In comparison to legislated environmental policies, covenants of this nature also provide some essential **positive** aspects. In general, covenants represent:

- A quicker means for government and industry to implement an agreement between the parties due to the absence of legal or bureaucratic procedures;
- A flexible instrument which also assures cost effectiveness, and
- A compromise between the concerned parties through their own responsibility based on a self-regulating method (Hiemstra, 1990).

When an industry begins the process by freely shaping and finally agreeing upon the voluntary covenant produced, it creates a system of self-regulation and thereby a psychological reinforcement mechanism for itself (Hiemstra, 1990). Through voluntary covenants, industries confirm that they consider themselves responsible for their waste and are willing to find ways to minimize it for the sake of a cleaner environment. This type of 'consciousization', as this author would define it, is much more effective and efficient than any enforcement by government regulations.

4.1 'Voluntary' covenants in the packaging industry of the Netherlands

Within this paper, it is unrealistic to cite each of the 50 or more 'voluntary' waste covenants which have been implemented in the Netherlands over the past ten years. Therefore, special attention is focused

on the voluntary 'Packaging⁸ Covenant' ('Verpakking Covenant'), of which at least eighteen have been signed since 1992 (World Resources, 1994). Since packaging waste represents one of the largest categories of waste in the country, this covenant is an appropriate choice.

The total quantity of packaging refuse in the Netherlands in 1990 is estimated to be more than $2,34 \times 10^9$ kg. Statistics show that around 43% of packaging waste comes from industries, 35% from households (bulky refuse), and around 17% from offices, shops and services (Clement, 1995).

By June 1991, the government and the packaging chain agreed on a Packaging Covenant, which includes both quantitative and qualitative methods for reducing waste through preventive policy measures. The general aim of the Packaging Covenant is to reduce the quantity (in kilotons) of packaging waste to nil by the year 2000. However, the specific quantitative target of the Packaging Covenant to be attained is to reduce the amount of packaging waste from 2 million tonnes in 1986 to 1.8 million tonnes by the year 2000 (10% decrease). On the qualitative prevention side, the chain agreed to prevent the use of less harmful substances and materials in the production of manufacturing packaging.

To achieve the above targets, the packaging industries have employed new technologies, used less material in packaging and utilised more refillable packaging (Clement, 1995).

Monitoring the targets, which is done through sampling, can be separated into two methods. The first monitoring system is an output measure, which assesses the quantity of new packaging material put on the market. The second method is an input measure, usually undertaken by RIVM, to evaluate the amount of disposed packaging (Mingelen, 1995).

The Packaging Covenant represents a *voluntary accord* which involves various actors of the packaging chain, including producers and importers of raw materials for packaging products⁹, manufacturers of packaging products, users of packaging material and those who put the packaged products on the market, as well as the recyclers of packaging waste. VROM is one of the parties to the covenant and has a guiding role in its development.

8 It is interesting to note that no simple definition exists for the concept of "packaging waste". Within the Netherlands, for example, packaging waste is defined as the *end* product of the packaging chain instead of packaging goods in general. In France, "packaging waste" is considered to be any form of container or holder for the purpose of holding a product, or facilitating its transport or sales display. In Belgium, however, there is no clear definition at all of what is understood as "packaging waste". Similarly, in Germany, no general definition for "packaging waste" exists, although there are specific descriptions of what is meant by transport and sales packaging (Bergkamp, 1993).

9 The monitoring of the packaging industry is done mainly by RIVM; it monitors, in particular, the amount of packaging that is being disposed of.

The second party to the covenant is the Foundation for Packaging and the Environment (Stichting Verpakkingen en Milieu, SVM), which represents the packaging industries. Although not all producers and importers are members, most large companies are, and they consequently adhere to the rules of the covenant. Inevitably, the principle of free membership creates the 'free rider' problem, especially among medium and small size companies, which tend to get away with observing no waste regulations as they are not part of the covenant agreement.

The Organization for Consultation on Waste Management (Afval Overleg Orgaan, AOO) also plays a role in the Packaging Covenant, although a more impartial one, as it strives to coordinate the activities of the different Dutch waste covenants through designing a Ten-Year Programme on Waste Management based on a coherent set of collectively accepted national waste management principles.

Another actor involved in the activities of the Packaging Covenant is the Association of Dutch Municipalities (Vereniging van Nederlandse Gemeenten, VNG), which represents the interests of the municipalities. Its concerns with regard to the Packaging Covenant are to ensure public health and the achievement of general environmental goals such as the prevention and reuse of materials, plus providing the lowest possible social costs for waste-collection and recovery.

However, important environmental groups, such as the Environment and Nature Organization (Stichting Natuur en Milieu, SNV) and the Organization for Environmental Defense (Vereniging Milieudefensie, VM) did not want to participate in the covenants when they were negotiated, and they function at present as critical observers. This is of interest because in the 1980s, these actors were considered to be the groups that brought waste packaging to the national agenda. They concluded at that time that refillable packaging systems should be implemented in the Netherlands, and they actively lobbied for them. However, these environmental groups, overall, considered the whole procedure of the Packaging Covenant to represent an unnecessary delay for the implementation of other more immediate actions for which they were lobbying. As a result, they are still not actively involved in the activities of the covenants. On the other hand, although these groups remain distrustful of self-regulation by industry, they do recognize the improvements brought by the Packaging Covenant. They, however, argue that the means to control excess use of packaging should remain solely the use of legislation and environmental taxes.

Another actor is the Dutch Consumer Association, which has been working actively on the Packaging Covenant. In the 1980's, similar to the environmentalists at the time, they supported the view that refillable packaging systems should to be used in order to minimize continual paper waste generation. They also lobbied for less harmful materials to be placed in packaging from the perspective of both short and long term environmental effects. By the 1990's, however, refillable packaging

systems were put on the 'back burner' as the Packaging Covenant gave priority to other means of reducing packaging waste. Similar to industry's position, the Dutch Consumer Association agrees with the polluter pays principle, the selection of incineration with energy-recovery as a second-best solution, the choice not to separate Plastics/Metals/Beverages (PMB) and the need for a national system of separate collection.

The final participant involved in the Packaging Covenant which should be mentioned is the Packaging Commission. This commission consists of representatives of the packaging chain and of government, and it has an impartial chairman who evaluates to what degree the two covenant parties (VROM and SVM) have lived up to their obligations. Similar to AOO, it is an impartial actor appointed to establish the means of monitoring the Packaging Covenant (Mingelen, 1995). In its last report, dated October 1994, it concluded that the covenant has had a positive influence on reducing packaging waste. Specific targets of the Packaging Covenant for the year 1995 and the levels of success are: the recycling of 60% of paper/cardboard, of which 56% was already being recycled by 1993; the recycling target of glass set at 80%, of which 66% was being recycled by 1993; and the recycling target of metal set at 75%, of which 37% was being recycled by 1993. The least successful target was set with regard to plastics, as only 9% was recycled in 1993 as compared to the covenant objective set at 50% by 1995 (Clement, 1995). Longer term objectives for the year 2000 include 60% material reuse, 40% incineration and an end to disposal at landfills.

The Dutch government has also taken the initiative in setting up pilot projects for the separate collection of different components to promote the reuse of packaging materials (Holland Waste Handling, 1993). The two most cited such pilot projects on consumer waste segregation in the Netherlands are those of Breda and Lemsterland, in which separate collection for recycling was provided for packaging materials. This kerbside collection system was successful for segregating paper/cardboard, although it proved to be difficult for PMB-cartons due to complicated separation requirements¹⁰. In addition, cost calculations proved that the manual separation of PMBs was also uneconomical, as there are a variety of plastic and beverage containers often made up of more than one material. Based on these pilot projects, the national plan does not include the implementation of a PMB component in its national segregation schemes.

Currently, only municipalities are responsible for the tasks of collecting the packaging waste of households. However, industries that use packaging by the middle of 1996 will be held responsible for taking back, as well as recycling, the packaging waste collected by communities. Within the context of future policies, legislation will be implemented under which municipalities will be required to set up separate collection systems for packaging waste with different targets for the separate materials. Means of

¹⁰The packaging sector is characterized by a variety of materials and forms of packaging which often leads to a complicated and too rigid system of packaging regulations (FNV, 1993).

achieving these goals include placing plastic, tin and aluminum in tanks placed in neighbourhoods; collecting glass in bottle banks (1 bank for every 650 inhabitants); collecting textiles at households at least once every three months or by placing textile collection tanks (1 tank for every 4500 inhabitants) in neighbourhoods and collecting paper and cardboard from households (door-to-door) at least once every four weeks.

Industries using packaging by the middle of 1996 will also be held responsible for taking back packaging waste from offices, shops and services. This take-back obligation for packaging waste will be applicable to everyone who brings packaging to the Dutch market. This refers to Dutch producers as well as importers. It should be mentioned as well that the processing of waste by industry will **not** be the task of individual companies, but one that is done collectively. The introduction of the extensive schemes with respect to take-back and recycling, together with further attempts to reduce the amounts of waste generated, are meant to reach all responsible actors. Presently, estimates show that 25% of all packaging refuse is being reused, an additional 25% is incinerated and the remaining 50% is dumped (Clement, 1995).

The results detailed in the latest report of October 1994 show that packaging material on the Dutch market did not increase in 1993 as compared to 1992 (Clement, 1995). One should, however, remember that this positive trend, as is also argued in the following section, is only the start of what seems to be a beginning of a reduction in the total quantity of packaging material waste with the target set at a decrease of 10% between 1986 and 2000. Inevitably, further studies need to be done to verify this.

4.2 The EU Directive concerning packaging and a comparative look at the packaging legislation in some EU countries

As the EU Directive will be incorporated into Dutch national legislation on July 1st 1996, the Packaging Covenant should be described in relation to some of its EU counterparts. The EU Waste Directive attempts to reduce the impact of packaging and packaging waste on the environment by bringing together national management measures within one unified policy approach.

As the following tables indicate, however, the regulations of individual EU countries are not yet in accordance with the EU Directive targets or each other. For example, there are various recovery targets set by different EU countries with regard to used packaging, with specific targets set for energy recovery by incineration in electrical generation and for recycling by reusing waste materials for additional production.

As Table 3 indicates, there is a considerable variety from country to country with regards to 'realistic' overall quantitative targets set on used

Table 3.: *Used packaging recovery targets*

Country	Timing	Targets	Status
EU Directive (Draft 4)	2005	90%	Draft directive
Netherlands	2000	100%	Voluntary
United Kingdom	2003	Min.60% for all materials	Decree
Sweden	N/K*	N/K	N/K
Germany	1993	20-60% depending on materials	Statute
	1995	80% for all materials	
Belgium (Flanders only)	1995	100%	Voluntary
France	2003	Total 75% valorization Min. 60% for all materials	Decree

*Not Known

Source: Fuller, T. In: *Green Packaging 2000, 1993*

Table 4.: *Used packaging energy recovery targets*

Country	Timing	Targets	Status
EU Directive (Draft 4)	2005	30%	Draft directive
Netherlands	2000	40% Maximum	Voluntary
United Kingdom	2000	Separate target planned	Government target
Sweden	N/K	N/K	N/K
Germany	1993	Not permitted as recovery	Statute
Belgium (Flanders only)	1995	64% Max (All waste)	Voluntary
		42% Max (All waste)	Voluntary
France	N/K	N/K	N/K

Source: Fuller, T. In: *Green Packaging 2000, 1993.*

packaging materials. The U.K. and France, for example, feel that a target higher than 75-80% is an unrealistic one.

The above variety in the general recovery targets, as a matter of fact, reflects the different policy sets for the use of packaging waste for energy recovery. Some EU countries such as Denmark, for example, incinerate over 65% of their waste, while others, such as Germany, are opposed to the incineration of waste. This is demonstrated in Table 4.

The final table (Table 5) describes the wide variation of national positions with regard to used packaging recycling targets. Various EU countries have taken the position that it may be better to postpone the packaging recycling issue and let it become part of a more comprehensive EU Waste Directive incorporating all waste. In these countries, it is felt that the cost of recycling used packaging is quite out of proportion to the total costs incurred for the conventional management of waste. In the U.K., for example, consultants have noted that by the year 2005 their government would spend between 1.8 and 2.3 billion pounds more on packaging waste management if the directive were to be adopted in its present form (Fuller, 1993).

Table 5.: Used packaging recycling targets

Country	Timing	Targets	Status
EU Directive (Draft 4)	2005	60% for each material	Draft directive
Netherlands	1992	40% Overall (Min.)	Voluntary
	2000	60% Overall (Min.)	Voluntary
United Kingdom	2000	50% Overall	Government
Sweden	2000	60-70% Glass 60-80% Aluminum 40-60% Steel	Proposed law for all
Germany	1993	60% Paper 42% Glass 26% Steel 18% Aluminum 18% Paper 9% Plastics 6% Laminates	Statute for all
	1995	72% Glass 64% Others	Statute for all
Belgium (Wallonia/Bruxelles)	1995	80% Metals 75% Glass 30% Plastics 25% Paper	Voluntary for all
	2000	70% Overall 80% Metals and glass 60% Paper and plastic	Voluntary for all (to become law)
Belgium (Flanders)	1995	28% Avg. - all material	Voluntary for all
	2000	46% Avg. - all materials	Voluntary for all

Source: Fuller, T. In: *Green Packaging 2000, 1993*.

A comparative study of environmental laws with respect to packaging within the EU was done by Hunton and Williams in 1993; various EU countries, namely, the Netherlands, Belgium, Germany and France, were studied in terms of their packaging waste legislation. Only the Netherlands and Belgium were found to have set up *voluntary* agreements between government and the packaging industry. Other EU countries, such as Germany and France, have had their packaging waste policies laid down strictly by government legislation and regulations. There is, therefore, quite a variety in the nature of the regulatory system applied regarding packaging policies among the EU countries. In the Netherlands, for instance, no specific packaging legislation measures exist, although it should be noted that there are some pressure groups pushing for specific legislation. Germany has legislation ('Verpackungs-Verordnung') for industrial, commercial and household packaging waste, while France only has legislation ('Decret No 92-377') regarding household packaging waste (Bergkamp, 1993).

As was stated earlier, the Netherlands has developed a Packaging Covenant, which is a 'public-private' initiative for reducing the overall level of packaging waste similar to that found in Belgium for both Brussels and Wallonia ("Covenant Verpakkingsafval"). This approach, however, remains unique in the EU. Other countries, such as Germany and France, do

not have such agreements as the basis of their waste policies (Bergkamp, 1993).

Germany has pending laws for separate hazardous packaging waste, although "private" initiatives and related agreements ("Duales System Deutschland", also often called the "DSD") are possible as well. Also in France, there is legislation regarding hazardous packaging waste, together with "private" initiatives and related agreements ("Eco Emballage SA"). The EU has proposed the necessary legislation for meeting mandatory provisions of the Directive, in addition to "voluntary" agreements (Bergkamp, 1993).

The EU Directive requests that member countries have at least 90 per cent of their packaging waste by weight removed from the waste stream for the purpose of recovery within 10 years of the date on which the Directive is implemented as national law. In addition, at least 60 per cent by weight of each material of the packaging waste should be removed from the waste stream to be recycled for new production (Ophem, 1994).

Restrictive measures in terms of qualitative waste reduction (i.e., regarding harmful substances) are only visible in two EU countries, namely the Netherlands and Belgium (Flanders only). Both countries require a reduction in harmful substances and heavy materials. Germany does not have any qualitative waste restrictions except for beverage packaging while in France absolutely no regulations of this nature exist as yet. The EU Directive proposes the limitation of harmful substances and specific limits on heavy metals (Bergkamp, 1993).

Packaging waste can either become recycled material used to create energy, incinerated without energy recovery or simply disposed of at landfills. Within the Netherlands, for the year 2000, targets for energy recycling and incineration for energy recovery are 60% and 40% respectively (see Table 5). In addition, by the year 2000, the Netherlands intends to have no more landfilling (0%). In Belgium, on the other hand, specific targets with regard to the disposal of waste at landfills only exist for Flanders, while Belgium's policies in Wallonia and Brussels are merely aimed at achieving higher levels of prevention and recycling of packaging waste. In Germany, by the year 2000, a minimum of 28% and a maximum of 36% of such waste will be disposed of at landfills. In France, no more than 25% of its packaging waste will be disposed of at landfills, according to the targets set forth in "Cahier des Charges" of Eco-Emballage. Overall, the EU Directive proposes that no more than 10% of all packaging waste be disposed of at landfills, and that this option should be viewed only as a method of last resort (Bergkamp, 1993).

Although the EU Directive proposes implementing uniform national laws, regulations and administrative provisions, there is presently a great diversity in terms of packaging reduction targets and objectives in the EU countries. And while the standards in the Netherlands seem to be high

in comparison to other European countries, the reader should not deduce that these waste policies will necessarily also produce the best results.

4.3 Harmonization with EU waste regulations

Presently, the EU is in a transition phase in which its members need to coordinate their own national waste regulations/laws with the EU Directive. As stated in a recent conference on municipal waste management in Western and Eastern European countries¹¹, although the situation in each country may be different, the problems of waste accumulation, bringing with it numerous environmental threats, remain the same in most states (Vonkeman and Stielstra, 1995).

In retrospect, although the Treaty on European Union states that the Union should promote a *harmonious and balanced* development of economic activities, as well as sustainable and non-inflationary growth with reference to the environment, it remains a difficult, although not impossible task. Regarding waste management, it remains, therefore, essential to keep in mind that not every EU country has the same political, economic or social structure as is found in the Netherlands. This makes the EU 'harmonization process' with specific reference to voluntary covenants unquestionably difficult to achieve.

In order to attain the EU Directive's target goals, some countries with relatively low waste reduction standards will possibly be inclined to use government regulations stipulating, for example, the use of economic instruments both at the industrial and consumer levels. It can only be hoped that these EU countries may eventually evolve to developing 'voluntary' covenants as the basis for their environmental policies, leading to a process of policy formulation by consensus as is found in the Netherlands.

'Voluntary' covenants should be considered as 'private' or gentlemen's agreements representing a new era of law giving/forming and having their own judicial status. They should be viewed as part of an evolutionary development from strict government regulations and laws to regulations - and possibly also legislation - based on voluntary agreements (Hiemstra, 1990). Voluntary agreements can be presented as basic instruments for future EU - and possibly international - environmental laws. The implementation of this type of 'self-regulating' model by both industries and consumers alike will create a healthier society as we, whether we like to admit it or not, have become a 'global village', in which the management and protection of the environment has become the responsibility of us all.

¹¹This conference, entitled 'East West, Waste Best' - An Introduction to Municipal Waste Management, was one of a series of East-West environmental conferences sponsored by the Dutch Ministry of Environment. This specific conference was held between the 14th and 16th of June, 1995 in Middelburg, the Netherlands.

5

Outlook

In general, the Netherlands has moved from the command-and-control approach of traditional environmental law towards a sustainable development model through self-regulation. This is an approach which other EU countries may emulate, since it is a prime example of successful voluntary waste reduction at both the industrial and consumer levels. Other EU countries may, therefore, benefit from the Dutch experience and consider how this approach may fit within the context of their own countries.

It should, however, be evident, that the Packaging Covenant in the Netherlands described in this paper is successful in part due to that country's unique historical and political framework of democratic participation¹². Partly due to this background, voluntary covenants in the Netherlands have been a success, since the appropriate atmosphere already existed for the type of cooperation necessary for them to work.

The future EU Directive should not pose any danger to the standing of the Dutch Packaging Covenant. The covenant will require some type of additional legislation, but it is suggested that the EU Directive should reflect the self-regulated behaviour on the part of industries as exists in the Netherlands and Belgium.

Waste policy in the Netherlands is also, to a large extent, decentralised in a geographical sense, which allows for interaction among various interest groups. In general, waste policy in the Netherlands is formulated, in its broadest sense, by central government and is, in turn, further developed by the provinces and municipalities which work out the details and implementation of the policy. For example, the provincial

¹² The Netherlands, as early as 1477, demanded more democratic participation by forcing Mary of Burgundy, the ruler of the not yet declared Netherlands, to sign a document, 'The Great Privilege,' which limited her power to govern as Queen. Sovereignty over the Netherlands was inherited by Charles V (1500-1558), grandson of Mary of Burgundy, but the transfer of rule to his son Phillip II (1527-1598) was not smooth, and Phillip was finally overthrown, mainly due to his attempt to suppress Protestantism. When the Netherlands finally won its independence, it consisted of seven areas, and it was then called the Seven United Republics, each of which had its own vested interests. In other words, the essential political foundation of the country was formed in this initial state based on consensus-building among the different parties/republics concerned.

environmental plans coordinate waste disposal planning, which includes the issuing of licences to companies to collect and process waste and to companies that use waste for further production. The municipalities are held responsible for the actual collection, transportation and disposal of household waste but may cooperate with neighbouring municipalities. It should be noted that in the case of municipal waste management, cooperation did not exist until costs became extremely high and political mechanisms were implemented for collaboration between different parties (Vonkeman and Stielstra, 1995).

A recent study, for example, concluded that environmental law enforcement up to now has been more effective than the use of covenants. This is based on research done at two paint industries in the area of Groningen. The work cites that these 'gentlemen's agreements,' which are at the heart of the covenants, do not bind the polluting parties effectively enough. The result is that the industries can easily avoid their obligations. However, the study also cites correctly, that it is only in the 1990s that more serious attention has begun to be given to looking into means of monitoring, controlling, and if necessary, penalizing the polluting companies (De Volkskrant, 1995). In essence, more research will need to be done to verify *fully* that companies may not have the maturity to comply with voluntary covenants.

Waste reduction through voluntary action, as is found in the Netherlands and Belgium, is encouraging since proper consideration is given not only to the consumer, but also to the industrial level. This forward looking/futuristic approach (Bruce, 1994) of 'voluntary' covenants not only means progress towards more effective waste management through scientific/ technological innovations but also through more mature environmental laws and through citizens working together towards more responsible behaviour.

References

- Alaerds, Peter. 1995. Laat de markt het vuil werk doen. *Intermediair*. March 24.
- AOO (Afval Overleg Orgaan): Tienjarenprogramma Afval-1992-2002. 1992. Utrecht.
- AOO (Afval Overleg Orgaan): Huishoudelijk afval in cijfers, 15 March 1995. Utrecht.
- Bergkamp, L. 1993. Europese Milieuwetgeving-update stand van zaken gevolgen voor verpakken. Hunton and Williams. Brussels.
- Bonomo, Luca and Higginson, A.E. 1988. *International Overview on Solid Waste Management*. Academic Press. London.
- Broek van den, Miranda. 1993. *Inspraak bij de afvalverwerking: een afvalrace?* Landbouwniversiteit Wageningen. Ernsting Publishers, Wageningen.
- Bruce, Jem H. 1994. *Urban Waste Management: Past, Present and Future Perspectives*. In: *International Directory of Solid Waste Management*. 1994/5. The ISWA Yearbook. James and James Science Publishers. London.
- Clement, Kees. 1995. *Speech on the Implementation of the Packaging and Packaging Waste Directive in the Netherlands presented for The Ministry of Housing, Spatial Planning and the Environment on March 30th*.
- De Volkskrant. 'Milieucovenant minder effectief dan wetgeving en voorschriften'. September 19th 1995.
- Euro Matters. 1992. *The New Packaging Directive: How Does it Affect You?* In: *Packaging Week*. October 7/14.
- Federatie Herwinning Grondstoffen (FHG). 1995. *Recyclen, omdat het moet! Tien branche-verenigingen herwinnen 10 miljoen ton*. The Hague.
- Fuller, Tony Baden. 1993. *EC Draft Packaging Directive Faces Three Hurdles to Adoption*. In: *Green Packaging 2000*. March.
- Hiemstra, Jan. 1990. *Conventanten als instrument van Milieubeleid*. Einddoctoraal scriptie nederlands recht civial rechtelijke afstuderrichting. Universiteit van Leiden.
- Holland Waste Handling. 1993. *DHV Environment and Infrastructure*. Amersfoort.
- Klok, P.J. 1989. *Convenanten als instrument van milieubeleid*, Enschede.

- Laurijssens, J.P.V.M. 1993. Waste Policy in the Netherlands. Paper presented at ISWA conference. July 5th.
- Ministry of Housing, Physical Planning and Environment (VROM). 1991. Essential Environmental Information - The Netherlands. The Hague.
- Ministry of Housing, Spatial Planning and Environment (VROM). 1994. Environmental Management Systems in the Netherlands. The Hague.
- Mingelen, Pieter Jan. 1995. Packaging in the Environment in the Netherlands. European recovery and recycling association. Brussels.
- Miranda, Marie Lynn. 1993. Managing Residential Municipal Solid Waste: The Unit-Pricing Approach. Resource Recycling. November.
- National Environmental Outlook. 1991. Rijksinstituut voor Volksgezondheid en Milieuhygiene. The Hague.
- National Environmental Policy Plan 2, 1994. Summary: The Environment: Today's Touchstone. Ministry of Housing, Spatial Planning and the Environment, The Hague.
- Ophem, van V. Hans. 1994. Company Management and Waste Prevention: The Eco-Management and Audit Scheme. In: Waste Prevention in the EEC. W.E.J. Tjeenk Willink. Zwolle.
- Salter, J.R. The Meaning of Waste. In: International Directory of Solid Waste Management. 1994/5. The ISWA Yearbook. James and James Science Publishers. London.
- Young, De Raymond. 1986. Some Psychological Aspects of Recycling. The Structure of Conservation Satisfaction. Environment and Behaviour, Vol. 18. No. 4, July.
- Vonkeman, H. Gerrit and Stielstra, Hans. 1995. East West, Waste Best. An Introduction to Municipal Waste Management. Institute for European Environmental Policy. Brussels. May.
- Visser, P and Boskma, J. 1990. De betrokkenheid van elektriciteits distributie bedrijven bij afval verbranding. Advies en ondersteuning milieubeheer. Amsterdam.
- Wiggers, L.F., Ophem van J.V, Vilheneuve de C.H.V., Douma en Th. W, Rijswick van H.F.M.W. 1994. Waste Prevention in the EEC. Report of conference of 'Working Party Waste' of the European Environmental Law Association, held in Amsterdam on June 4th 1993 under the responsibility of the Dutch Environmental Law Association. W.E.J. Tjeenk Willink, Zwolle.
- World Resources. 1994. National and Local Policies and Institutions. Oxford University Press. Oxford.

Abbreviations

AOO	Afval Overleg Orgaan
EC	European Community
EMA	Eco-Management and Audit Regulation Scheme
EU	European Union
FHG	Federatie Herwinning Grondstoffen - Federation of Recycling Materials
NEPP	National Environmental Policy Plan
NEPP Plus	National Policy Plan Plus
OECD	Organization of Economic Cooperation and Development
PMB	Plastics/ Metals / Beverages
RIVM	Rijksinstituut voor Volksgezondheid en Milieu Hygiene - Government Institute of Public Health and Environment
SNM	Stichting Natuur en Milieu - The Environment and Nature Organization
SVM	Stichting Verpakking en Milieu - Foundation for Packaging and the Environment
TJP-A	Tien Jaar Programma over Afval Overleg - Ten Year Programme of Waste Management
VM	Vereniging Milieudefensie - Organization for Environmental Defense
VNG	Vereniging van Nederlandse Gemeenten - Association of Dutch Municipalities
VROM	Ministerie van Volkshuisvesting, Ruimtelijk Ordening en Milieubeheer - Ministry of Housing, Spatial Planning and Environment
WEDC	World Commission on Environment and Development

IHS Working Papers Series

- 1 *Land Management and Guided Land Development in Jakarta*, by Liliana Marulanda and Florian Steinberg (1991)
- 2 *Action Planning*, by Pal Baross (1991)
- 3 *Neighbourhood Consolidation and Economic Development of Informal Settlements*, by Robert-Jan Baken, Peter Nientied, Monique Peltenburg and Mirjam Zaaier (1991)
- 4 *Institutional Development: Theoretical Aspects in Urban Practice*, by Marco Vonk (1992)
- 5 *Illegal Subdivision in Rio de Janeiro: Dimensions, Characteristics and Government Responses*, by Eliane Faerstein and Maria Teresa Correa de Oliveira (1992)
- 6 *Government and NGOs/CBOs working together for better cities. Strategies and practical modalities for increased cooperation in human settlements between local, state/provincial and national government institutions and NGOs/CBOs*, by Forbes Davidson and Monique Peltenburg (1993)
- 7 *The integrated Urban Infrastructure Development Programme and Urban Management Innovations in Indonesia*, by Robert van der Hoff and Florian Steinberg (1993)
- 8 *Development Support Communication for Urban Management in Developing Countries*, by Florian Steinberg (1994)
- 9 *Viable Self-Management: The FUNACOM Housing Programme of the São Paulo Municipality*, by Rosana Denaldi (1994)
- 10 *Local Economic Development and Urban Management; Experiences of Porto Alegre, Brazil*, by Mirjam Zaaier (1995)
- 11 *Producer Responsibility in Waste Management - the Dutch Model, with specific reference to packaging*, by Marielle Snel (1996)
- 12 *Partnerships, a View of Issues and Perspectives through the Brabantse Poort Nijmegen*, by Carley Pennink (1997)
- 13 *Local Government and Economic Development in CEE: the Case of Bratislava*, by Peter Nientied (1997)

